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U. S. DEPARTMENT OF THE INTERIOR

**ANNUAL REPORT OF THE
COMMISSIONER OF RECLAMATION
TO THE SECRETARY OF THE INTERIOR
FOR FISCAL YEAR ENDED JUNE 30, 1924**

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BUREAU OF RECLAMATION

ELWOOD MEAD, Commissioner

TWENTY-THIRD ANNUAL REPORT

OF THE

BUREAU OF RECLAMATION

Transmitted to Congress in pursuance of the
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FOR THE

FISCAL YEAR ENDED JUNE 30, 1924



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LETTER OF TRANSMITTAL

DEPARTMENT OF THE INTERIOR,
BUREAU OF RECLAMATION,
Washington, October 7, 1924.

THE SECRETARY OF THE INTERIOR.

DEAR MR. SECRETARY: The twenty-third annual report of the Bureau of Reclamation is herewith submitted.

The changed circumstances and needs of Federal reclamation have been discussed in the first pages of this report followed by a recital of the year's operations.

Respectfully,

ELWOOD MEAD, *Commissioner.*

TWENTY-THIRD ANNUAL REPORT
OF THE
BUREAU OF RECLAMATION

GENERAL DISCUSSION

CHANGING CONCEPTION OF RECLAMATION.—INEFFECTIVE REMEDIES.—THE COMMITTEE OF SPECIAL ADVISERS ON RECLAMATION.—SUCCESS OF FUTURE PROJECTS DEPENDENT ON FURTHER LEGISLATION.—LEGISLATION RECOMMENDED BY THE ADVISERS.—FUTURE DEVELOPMENT MUST BE SAFEGUARDED AGAINST LAND SPECULATION.—MONEY MUST BE PROVIDED TO SUPPLEMENT SETTLER'S CAPITAL.—THE NEED OF A LONG-TIME PLAN FOR FUTURE DEVELOPMENT.—NEW PROJECTS REQUIRE EXTENDED INVESTIGATION.—PROBLEMS OF NEW PROJECTS.—THE ECONOMIC SURVEY.—GUERNSEY RESERVOIR, NORTH PLATTE PROJECT.—KITITAS DIVISION, YAKIMA PROJECT, WASHINGTON.—BAKER (POWDER RIVER) PROJECT.—OWYHEE PROJECT, OREGON-IDAHO.—VALE PROJECT, OREGON.—SPANISH SPRINGS EXTENSION, NEWLANDS PROJECT, NEVADA.—SALT LAKE BASIN PROJECT, WEBER-PROVO DIVISION.—CLASSIFICATION OF LANDS OF PROPOSED PROJECTS.—COMPLETION OF EXISTING PROJECTS.—A TENTATIVE PROGRAM IS AVAILABLE.—EXPLANATION OF PROJECT NEEDS.—LEGAL ACTIVITIES.—GOVERNMENT WATER RIGHTS.—TENANTRY.—CONTRACTS UNDER THE WARREN ACT.—DISPOSAL OF UNSUCCESSFUL PROJECTS.—OPERATIONS DURING THE FISCAL YEAR.—FINANCES.

CHANGING CONCEPTION OF RECLAMATION

Discussions in Congress, official reports, and articles in the press, all bear testimony to the fact that a change is taking place in our conception of what is needed to make national reclamation by irrigation a social and economic success. All are agreed that a lofty purpose animated the framers of the national reclamation act; yet all familiar with its history realize that not all the conditions under which it would operate were foreseen, and that the results are unlike those anticipated.

When this act was framed the country was still in the pioneer period of development; irrigation works as a rule were neither large nor costly, areas watered from a single project were not extensive, and settlement of these areas shaped itself without organization or plan except in particular cases like those controlled by the Mormon Church. It was the common belief that all that was needed to obtain irrigated farms and prosperous homes was to provide water by building canals and reservoirs. The sponsors of Federal reclamation believed it would be a simple matter to change arid, unimproved land into farms because they thought the settler would have virtually free land, and that water would be cheap because the irrigation works would be constructed by the Government without profit, and with interest-free money.

As a result of this conception, the act dealt almost entirely with the construction and operation of irrigation works. The obstacles settlers would encounter in subduing the land, equipping farms, and meeting payments on water rights were not regarded as serious enough to require a place in the development program. Time has shown that this was a mistake. Land has not been free; a majority of the settlers had to buy their farms from private owners, in some cases at extortionate prices.

It is now known that the cost of changing 40 or 80 acres of raw land into a farm is not only much greater than was anticipated, but often equals or exceeds the cost of canals and reservoirs. It is beginning to be realized that development under important works

requires a study of agricultural and economic problems, and the working out of settlement and development plans if the land is to be brought under cultivation without disastrous delays and waste of money and effort.

In the 22 years of the act's operation social and economic conditions in the arid region have undergone a revolutionary change. People are no longer willing to undergo the hardships or privations that once were a part of pioneer life or adopt the methods which enabled pioneers to succeed when land was free, when they had no debts for land and very small payments for water rights. Even if they were willing, these methods will not answer to-day when the farmer has to pay higher taxes, pay the higher irrigation charges, pay more for improving farms, and too often pay high interest rates on money borrowed to buy or equip his farm. The financial problems of land settlement have assumed an importance which did not exist 20 years ago and which as yet is only partly realized.

INEFFECTIVE REMEDIES

Because of the difficulties above enumerated, but without fully understanding their significance, Congress has from time to time passed laws, having as their purpose the relief of water users on Federal irrigation projects. The first of these laws was the Curtis Act of February 13, 1911 (36 Stat. 902). At that time public notices had been issued for 15 of the projects, which notices announced construction charges payable within a period of 10 years, as provided by the act of 1902. To a large extent, the farmers did not meet their payments and substantial delinquencies accumulated. A strong demand was made by them for the withdrawal of the public notices so as to stop the accruing of construction installments. The Curtis Act gave the Secretary a broad authority to withdraw these notices and to alter existing contracts. The authority of the act was utilized on all of the projects in question.

The concessions made by the United States under the 1911 act were held to be insufficient, and many requests were made for further deferments. As a result of this agitation, the extension act of August 13, 1914 (38 Stat. 686), was enacted, which doubled the length of time within which payment was required, making it 20 years.

Section 2 of the extension act required annual payments of 2 per cent of the construction charge for 4 years, then 4 per cent for 2 years, and afterward 6 per cent. Because of the inflation of the World War and the smaller payments that were at first required; no serious trouble concerning payments was experienced until 1920. Urgent appeals for relief, which then began coming in, have resulted in the passage of four temporary relief measures. The first measure is the joint resolution of May 17, 1921 (41 Stat. 4), the second, the act of March 31, 1922 (42 Stat. 489), the third, the act of February 28, 1923 (42 Stat. 1324), and the fourth, the act of May 9, 1924 (43 Stat. 116).

The resolution of 1921 merely provided for the delivery of irrigation water without reference to delinquency. The three subsequent relief measures authorized delivery of water and also various deferments of charges. Under the relief act of 1922, 1,741 individual applications were received, and under the relief act of 1923 the applications numbered 3,239. The complete record for 1924 is not available at this writing.

This remedial legislation has not removed the troubles it was intended to cure. The deferment of charges does not touch the heart of the matter. The distressing symptoms of 1911 still obtain.

Enough experience has now been had to place reclamation on a permanent basis. The Government ought not to make contracts which water users can not meet and when they are made they should be enforced. Continued deferments or modifications of agreements will certainly lead to the belief that they are mere scraps of paper. Hereafter they should be regarded as binding obligations which must be faithfully observed.

THE COMMITTEE OF SPECIAL ADVISERS ON RECLAMATION

These are the facts which give special significance to the appointment by the Secretary of the Interior of a committee of special advisers on reclamation¹ and make its appointment the most important event of our calendar in the fiscal year 1923-24.

This committee was asked to make an intensive study of the national reclamation policy, the law giving it effect, and its application under Government methods in reclaiming arid land by irrigation.

In his letter to the advisers the Secretary called attention to the fact that many original settlers had been compelled to abandon or surrender their farms after spending their capital and performing the hard and unprofitable work of development; that large areas of land, under some projects, were held by nonresident owners and cultivated by tenants in violation of a fundamental purpose of wise reclamation; and that the solvency of some projects was threatened by arrears of payments and by requests for postponement of charges, which would only augment the aggregate of debts already grievously burdensome. These things indicated that the Government reclamation policy had, in a measure, failed to accomplish the human and economic purposes for which it was created. The Secretary hoped that an intensive study of the causes of these conditions, by a group of trained men from different walks in life, would result in recommendations which, if adopted, would bring the program of the Bureau of Reclamation into harmony with existing conditions, would improve the finances of Government projects, and promote home ownership by people of small means.

The committee organized and began its investigations on October 15, 1923. Its report² was submitted on April 10, 1924, and was thereafter approved by the Secretary and the President, and transmitted to Congress.

Unfortunately, it did not reach Congress until near the end of the session. Time was lacking to give adequate consideration to all the committee's recommendations. A bill (H. R. 9559, sec. 5) having for its main purpose the financial relief of settlers on existing projects, has passed the House and is now before the Senate. This bill is based

¹ The committee consisted of the following: Thomas E. Campbell, of Phoenix, Ariz., former Governor of Arizona and president of the League of the Southwest; James R. Garfield, of Cleveland, Ohio, attorney-at-law, former Secretary of the Interior; Oscar E. Bradfute, of Xenia, Ohio, president of the American Farm Bureau Federation; Clyde C. Dawson, of Denver, Colo., attorney-at-law, and a director of the Chamber of Commerce of the United States; Elwood Mead, of Berkeley, Calif., engineer, professor of rural institutions of the University of California, and former chairman, California State land settlement board; and John A. Widsøe, of Salt Lake City, former president of the Utah Agricultural College, and president of University of Utah.

² The report of the committee of special advisers on Reclamation was printed as Senate Document 92 of the Sixty-eighth Congress, first session. A limited number of copies are available on application to the Bureau of Reclamation, Washington, D. C.

on the committee's recommendations, but does not include some that are of fundamental importance to future development. If enacted in its present form it will authorize the following modifications in reclamation methods:

1. The annual payments on construction charges will be based on the average annual gross crop return; now they are based on a percentage of the project cost, fixed without relation to the productivity of the land.

2. Where lack of soil fertility, scarcity of water, or other adequate cause renders settlers unable to pay project costs, the Secretary may make such investigation as will disclose the pertinent facts and report them to Congress with recommendations, looking to a correction of the fault. The present law calls for repayment of project costs in full regardless of the value of the water made available for irrigation.

3. Operation and maintenance charges will be paid in advance, thus bringing Government practice in harmony with that of privately owned works. Such charges are now, for the most part, paid after the service is rendered.

4. The costs of the Washington office, including expenses of general investigations similar to the one undertaken by the committee, will be charged to the reclamation fund; but not to the water users as at present.

SUCCESS OF FUTURE PROJECTS DEPENDENT ON FURTHER LEGISLATION

All the foregoing changes will be helpful in the operation of existing projects, but if legislation stops with these the amended reclamation act will not provide a working plan for the development of new projects. The reason for this is the fact that many of the best opportunities for future reclamation are where the land is now privately owned. Under the grazing homestead act filings have been made on virtually all the land which can be irrigated, and much of this land is held in areas larger than homestead units and by people who have no intention of becoming irrigators if works are built.

Although private land projects may be taken up and constructed by the United States under the Reclamation Act, it was never the purpose of that act to subsidize private owners by furnishing interest-free money to develop their excess land holdings, leaving them free to capitalize the Government's investment in reclamation works and add it to the price at which they sell their excess holdings to actual settlers. Nor was it the intention to improve arid estates by supplying water and then leave the owners of those estates to create a system of tenantry and rent the land on an irrigation basis.

Yet the law in its present form is conducive to both of these things and both have happened repeatedly. Lack of adequate authority has prevented the Bureau of Reclamation from adopting a coordinated or orderly subdivision and settlement of these privately owned properties. In too many cases high prices asked for land, held in large tracts before the Government works were authorized, have retarded settlement and agricultural development, have increased tenantry, and made the act an instrument for creating poverty among oversanguine and inexperienced farm buyers.

LEGISLATION RECOMMENDED BY THE ADVISERS

The evidence of the benefits of a coordinated plan of settlement was so convincing that the committee of special advisers sought to provide this. It proposed what seemed to it the only effective means, which was that the Government buy or secure absolute control of all the privately owned land held by any individual in excess of a homestead unit before works are authorized or development begun.

Recommendation No. 12 deals with this subject, was embodied in section 3 of a draft of a bill that accompanied the committee's report, and reads as follows:

12. *Disposition of private lands in excess of farm unit.*—That no reclamation project should hereafter be authorized until all privately owned land in excess of a single homestead unit for each owner shall have been acquired by the United States or by contract placed under control of the Bureau of Reclamation for subdivision and sale to settlers at a price approved by the Secretary. This price to be considered in determining what land and water will cost settlers and hence the feasibility of the project under the payment conditions of the law.

This was opposed by some who do not realize the difficulties in obtaining settlers under existing projects, public or private, and by others who regard land speculation as a legitimate feature of reclamation. Still others believed that the purchase of the land would involve too large an investment of money in a single project and would increase the complications of reclamation. For these reasons this section of the bill was omitted from the measure now before Congress.

If, however, control of settlement were made possible the bureau could go ahead with development, certain that the future settler could get his farm at its actual value. It could proceed to subdivide excess lands into farms of proper size, could adjust the prices of land to agree with productive values, and could give long-time payments with low interest. If the Government owns or controls the land in excess of homestead units, it can properly give liberal terms to farm buyers and make it possible to obtain settlers with small capital, but equipped by character and experience to succeed. In other words, if plans for settlement and farm development are made a part of reclamation the policy will be complete instead of stopping as it now does where engineering ends and agriculture and human welfare begin.

The Advisory Board framed other recommendations to accord with this governmental control of excess land. One of the sections of the act provides that under new works construction charges would not be imposed until a period varying from one to five years after water was ready for irrigators. This is a desirable feature for harassed settlers trying to improve and equip farms, but it will open the way to abuses if it is to apply to excess holdings owned by individuals.

Taking part of the advisory board's legislation recommendations and rejecting part, creates an unworkable plan. It is useless to apportion construction costs carefully if the owner of large project areas ignores these in fixing selling prices of lands to settlers. To let the owner of large holdings escape any payment of project costs for one year or five years, as is provided in Subsection E of the bill now before Congress, and thus hold on to the land while asking excessive prices, is an abuse which will delay development and jeopardize some of the most beneficent possibilities of the act.

FUTURE DEVELOPMENT MUST BE SAFEGUARDED AGAINST LAND SPECULATION

The evidence placed before the Advisory Board was conclusive as to the need for safeguarding future development against the evils of land exploitation. The reports of the central cost review board of 1915-16 repeatedly called attention to these abuses. A quotation from one of these reports reflects this conclusion:

It (the board) believes there are a small number of water users who are having a hard time, and who have our sympathy. But their plight is not due to high charges for water or threatened project costs. The evils of this project are inflated land prices, high freight charges, high interest rates, alien landlordism, a nominal and not actual compliance with the regulations fixing the size of farm units that closely verges on fraud. Agricultural methods are poor because so much of the land is farmed by tenants, who have no reason to make improvements, nor money or equipment needed to cultivate this land as irrigation requires. All these malign influences are back of the efforts to reduce project costs. (Reclamation Record, July, 1916, p. 299.)

Unless the law is changed there is no reason to anticipate better results in the future. On new projects some landowners will look to reap advantages from sales of land to settlers at inflated prices rather than from an increase in earning capacity.

If irrigators have to buy their farms from these owners what will they be asked to pay for land on one area where competent opinion fixed the value of land at \$5 an acre? One owner said his price was \$50 an acre. He believes that he can get \$45 an acre rakeoff as his part of the benefit of Government construction. He sees nothing wrong in this. Nevertheless the wrong and the injury exist. Money that ought to be spent on improvements would go to make inflated land payments. The field officers of the Bureau of Reclamation would face the heartbreaking experience of seeing settlers work under conditions so discouraging as to give almost no hope of success.

MONEY MUST BE PROVIDED TO SUPPLEMENT SETTLER'S CAPITAL

Nowhere is early and successful closer settlement more important than under Government projects. On all new projects under consideration the existing population must be largely increased if the best results are to be obtained from the cultivation of the land, but it is becoming increasingly difficult to secure settlers equipped with means to develop homes on these new projects. A number of States realizing this have either enacted laws providing financial assistance to group settlement or are considering doing so.

The prospect of settling in an undeveloped territory, where there is lack of social advantages, public improvements, roads, schools, churches, and amusements, where taxes are high and where the neighborhood conditions are unknown, does not appeal to people who are able to buy farms without borrowing. It will, therefore, be necessary to scale down the financial requirements of settlers to the very minimum, which will result in hardship and slowness of development unless some means is provided for supplementing the settler's capital. A suitable credit fund, wisely administered, would do much to alleviate distress and, in many cases, avoid insolvency. Unless this is done, settlers will have to face high interest rates, difficulty of borrowing the money needed to bring their farms under cultivation,

and the risk which attends loans made under unsatisfactory conditions. Believing that the creation of such a credit fund would be the most effective means of enhancing the human values and the economic benefits of Federal reclamation, the advisory committee reported in favor of such a fund in recommendation No. 31, which reads as follows:

31. *A credit fund for farm equipment.*—Project settlers are in need of relief from paying high interest rates on short-time loans. They are often unable to borrow money with which to improve and equip their farms. A credit fund should be provided under competent control, from which settlers on the projects can borrow money with which to make permanent improvements or to buy needed equipment and livestock. Loans for permanent improvements, secured by the land, should run not to exceed 30 years; loans for equipment and livestock not to exceed 5 years. The rate of interest should be 5 per cent; payments of principal should be amortized; the making or refusing of loans should be at the discretion of the credit authorities.

THE NEED OF A LONG-TIME PLAN FOR FUTURE DEVELOPMENT

It has been found expedient in past development to suspend engineering construction on certain projects until settlement and agricultural development had utilized the portion already built. This leaves a number of projects only partly developed. The time seems to have arrived when their completion should be given careful consideration and a long-time program of development worked out. The need for doing this arises from the fact that the completion of these projects will make a serious inroad on the reclamation fund for the next 10 years, and will have a vital relation to the adoption of new projects. This relation of old development to new needs to be carefully considered because the reclamation fund has drawn heavily from resources within some of the western States that have received comparatively little in return. In some States irrigation is the only hope for further development; in some localities irrigation development will help to open mines and secure railways and factories. These States will press for new projects or arrangements that will insure future construction. What is needed, therefore, is a program of development which will fix the location and order of construction of new works for a number of years.

There is need also for a study of the relation of Federal reclamation to irrigation development being carried out under State laws. There are many unfinished private projects and there is the question of what should be done under irrigation district laws with their provision for the issue of tax free bonds. In recent years the construction of works under these acts has proceeded quite rapidly, especially in California and Oregon, but many of these projects have proved financially unprofitable. In some cases money to complete development can not be secured. There is a tendency or temptation to look to the reclamation act as a life-saver for these dubious enterprises. All of these things emphasize the need for a definite program of development.

If an attempt is made to look ahead, the question will arise whether States or localities having a special interest in irrigation projects should not contribute a part of the cost aside from that paid by the settlers. There are a number of reasons for enlisting State cooperation and State aid in the settlement and agricultural development of

projects. The State has an even greater interest than the Nation in character of the people who make homes on this land. The quality of schools, the building of roads, the support of churches, intelligent decisions of public questions in elections, and things that minister to the higher life of communities all depend on the character of the settler. The foundation of the State's future civilization is laid in these new communities. Rural development of States would be promoted if aid in colonization and agricultural development could be decentralized with the State having a direct participation in the selection of settlers and the development of farms.

No one can study the conditions of the arid States and the manner in which reclamation is destined to influence their growth and prosperity, without realizing that what is needed is a program for future development which will be planned to extend over two or three decades. The final authority which determines what shall be done is Congress, and if arrangements could be made by which Congress could create some permanent joint committee which could cooperate with the States in fixing the spheres of State and Federal activity and determine what each should do, such a joint committee or commission would have great influence in clearing up the complex situation which now exists with regard to the amount of unappropriated water available for either industrial or agricultural development and avert destructive conflicts which are likely to arise if the present development continues. Not only are there controversies between States over the use of water for the same purpose, but there are contests between rival interests seeking control of streams for irrigation or for the generation of hydroelectric power. These tend to impair the security of large investments of money in industrial enterprises and the permanence and value of many farm homes. As population increases the demand for water will increase in like measure. Only public control based on a careful study of all the rights and interests involved can avert wasteful development and conflicts of interests that will be a menace to social and industrial progress.

It is hoped, therefore, that such action may be taken by Congress as will result in a thorough investigation of the unused agricultural resources of the West, the water laws which affect that utilization in the different States, and the working out of a program of reclamation and power development affecting the whole arid region and extending over a long period of years. Whatever information is needed could be gathered by the bureau and by the irrigation authorities of the different States. The labors of this committee could not fail to be of great value.

NEW PROJECTS REQUIRE EXTENDED INVESTIGATION

Under present law Congress allots the reclamation fund and thus decides when and what new projects shall be adopted, but the law likewise contemplates a recommendation by the Secretary of the Interior after investigation by the bureau under him. For the benefit of Congress and the department there should be complete investigation of irrigation projects before decision is reached to develop them at the expense of the Federal reclamation fund. This involves a number of phases. Engineering studies are necessary to determine the physical availability of land and water, the feasibility of con-

structing the necessary reservoirs, canals, and other works, and to provide an estimate of their cost. Legal questions regarding the water, the practicability of acquiring the necessary rights and arrangements with landholders should be covered with equal care. Of equal or even greater importance than engineering and legal phases of new projects there should be studied their agricultural possibilities. There should be determined in advance the cost of developing a farm to a point where full production can be realized and the value of the irrigation water in farming the lands, which should be classified in accordance with their ability to produce and to repay the irrigation costs.

The projects already developed include more private than public land and new projects will largely be for the irrigation of lands that have already passed into private ownership. In many cases virtually the entire area will be private land. Before the United States spends money for the development of such lands complete arrangement should be assured that the enhancement of their value will not enter the pockets of speculative holders and be added in selling prices to the burdens assumed by the actual settlers and cultivators. Arrangements, vital to successful development, will provide for the acquisition by the Government of excess holdings, their subdivision and disposal to home-making settlers at reasonable prices.

PROBLEMS OF NEW PROJECTS

In April, 1924, Secretary Work submitted to the Bureau of the Budget estimates of appropriation for commencing construction of important irrigation works on six projects. Three of these were new projects designated as the Salt Lake Basin in Utah, the Vale in Oregon, the Owyhee in Idaho and Oregon. In the three other cases the proposed works were related to projects already in hand including a reservoir at Guernsey, Wyo., on the North Platte project, a reservoir at Spanish Springs for the benefit of the Newlands project, in Nevada with canals for new lands adjacent, and the Kittitas division of the Yakima project in Washington which will bring the distribution facilities into harmony with the storage recently enhanced by construction of the Tieton Reservoir.

These budget estimates dealt with construction costs. The engineering features of these proposals have been investigated over a period of years and were well defined. The appropriation suggested approximated \$6,000,000, but the works contemplated would cost in excess of \$50,000,000.

THE ECONOMIC SURVEY

The appropriation estimates did not deal with the problems and expenses of land settlement or agricultural development. The advisory board, showing conclusively that solvency of any reclamation project depends largely on the fitness of settlers and earning power of land, recommended agricultural and economic investigations of all future projects before development. The Secretary directed that such investigations be made of all these proposed developments and that a further economic survey be made of the Baker project in Oregon because its feasibility had been questioned following a report prepared by the United States Department of Agriculture.

These economic surveys have been organized to determine the productive power of the land and what farmers can afford to pay

for water, to determine the size of farms and the amount of money needed to improve and equip them for irrigated agriculture, to fix the areas of land in public and private ownership and the settlement policy needed to secure prompt development and return of construction costs. The plan followed was to secure the aid of agricultural and economic experts from the agricultural colleges of the States in which the projects were located, men with technical training and a knowledge of local conditions. The cooperation of the State agricultural colleges of Utah, Nevada, California, Oregon, Washington, and Idaho made this possible. In addition, soil experts from the Department of Agriculture and engineers from the Bureau of Reclamation took part in these studies and rendered valuable assistance. After the technical studies were completed and conclusions reached, the reports were submitted to a group of local bankers and business men for comments and criticisms on matters about which they have practical knowledge, such as the acreage value of crops grown, the cost of improving and equipping farms, the credit settlers will need, and the construction cost they can afford to pay.

In inviting these expressions from local people it was realized that there might be a bias in favor of development, which would tend to make statements too favorable, but against this there is the fact that all who participate in these studies become in a sense responsible for the results if the project is approved by Congress. That these investigations have been entered upon with a full sense of this responsibility is shown by the following quotation taken from a letter of one of the investigators:

I have insisted with my colleagues in the State, during the time we have been working on this matter, that we must not, under any conditions, make any recommendations for projects or parts of projects that are not financially sound. While we have great need of water, we also have a reputation to preserve.

The importance of these investigations has been greatly increased by the changes wrought in rural conditions by the Great War. The cost of everything that enters into the construction of irrigation works and into changing raw land into irrigated farms has been greatly increased. This means there is less margin between outlay and income and greater need to guard against mistakes and waste.

The return of the Government's investment must come from the sale of irrigated crops, and where irrigation works are not followed promptly by settlement and irrigation of the land, either the Government is not paid, or the land becomes a financial burden to its owner. Along with plans for construction should go plans for the subdivision and settlement of the land. The greater the construction cost, the more important it is that plans for settlement and farm development be carefully thought out. Hereafter, more attention must be given to the questions where and how settlers are to be secured, what improving and equipping a farm will cost, and where the money for this development is to come from.

The six projects being investigated illustrate the complex business and social conditions under which Federal reclamation has to operate. These influence the feasibility of projects and the welfare of settlers. They should shape the methods and policy of this bureau. The reasons for this will be made apparent by the explanation of the present economic conditions on the areas which it is proposed to reclaim and develop.

GUERNSEY RESERVOIR, NORTH PLATTE PROJECT

Additional water storage and regulation will be required for the North Platte project before all the lands of the Interstate, Northport, and Fort Laramie divisions can have a full water supply. There is a good reservoir site in Wyoming on the North Platte River about 160 miles below Pathfinder Reservoir and 10 miles above Whalen Dam, the diversion for the North Platte project. The two main functions of this reservoir will be to regulate the use of water turned out at Pathfinder Reservoir and catch the run-off entering the river between Pathfinder and Guernsey. A subordinate use will be power development.

The storage capacity of the site is 72,700 acre-feet. It is estimated, on the basis of past records, that it will store annually about double the above amount. The dam site is in a canyon. The dam will be 97 feet high above river bed and its top length 575 feet. It will have a gravel and rock fill embankment and faces riprapped with rock. The total quantities in the embankment will approximate 500,000 cubic yards.

Although the North Platte project has favorable agricultural conditions the financial situation of its farmers is serious. This menaces payments of construction and other charges due the Government. Much of the land is heavily mortgaged, payments are overdue, and farmers work under dread of foreclosure. This is not the result of Government operation. The settlers lacked capital to pay for and improve their farms. They had to borrow at high rates of interest, 8 and 10 per cent, and on short-time notes. Foregoing payments to the Government will not pay the private debts. Some means is needed of refinancing them, of refunding these debts at 5 per cent on 20 to 30 years amortized payments.

The debts due the Government on land north of the river are fixed by numerous contracts under the reclamation act or the Warren Act with individuals, companies, or irrigation districts. On the south side the expenditure and arrangements for its return are less advanced. These additional contracts for repayment of project costs should be made before the next irrigation season begins.

The main canal of the Fort Laramie division runs through a broken and difficult country. Its construction has been expensive and project costs will be high. This would not be a reason for any anxiety if the land was subdivided into proper farm units and improved for intense culture under irrigation; with a few exceptions both of these things remain to be done.

On the west end of this division tenancy has to be dealt with. A part of this was public land with here and there large stock ranches privately owned. The public land was thrown open to entry in 80-acre units, preference being given to soldiers. At one of the openings 3,300 individuals applied for 80 of these, an average of more than 40 applicants for every farm. If the law had permitted a scrutiny of settlers' qualifications and a selection of those best fitted for this development there is no doubt that from this number 80 real farmers could have been chosen. Instead of this, the farms were drawn by a lottery. Too many "winners" were artisans or business men in near-by towns to whom a gift of 80 acres of land looked attractive. A majority lacked money and experience. Few realized what they must do to meet their obligations to the Government and what it would cost to prepare these farms for irrigated culture.

What most of them did was to put up rough-board and tar-paper shacks, often without a floor, and doing that exhausted their capital. Then the land was rented. Of the 80 farms, 68 are now being cultivated by tenants and of these tenants 55 are aliens. What should be done is a serious question. If the purpose of the reclamation act is to be fulfilled, then tenants ought to be replaced by American farm owners.

The farmers on the eastern end of the Fort Laramie division are heavily in debt. Some of the land has been taken over by banks and mortgage companies. There are dry farms of over 1,000 acres which need to be subdivided. How and where are the purchasers for these surplus lands to be found? It must be done if the money to meet project costs is to be paid out of crops. Already requests have been made to have project costs cut down and to have payments postponed until interest-bearing debts can be reduced.

KITTITAS DIVISION, YAKIMA PROJECT, WASHINGTON

ENGINEERING FEATURES

This division is located in the vicinity of Ellensburg, in the State of Washington. It contains about 70,000 acres of irrigable land. The water supply will be obtained from the natural flow of the Yakima River and from storage reservoirs already constructed. The irrigation plan contemplates the construction of a diversion dam on Yakima River about one-half mile above the town of Easton. The Main Canal runs on the south side of the Yakima River for about 27 miles and the North Branch crosses the river and runs around the north and east sides of the valley, finally reaching the river 6 miles south of Ellensburg. This branch is 50 miles long. The South Branch extends from the end of the Main Canal for a distance of about 14 miles. The capacity of the Main Canal varies from 1,000 to 840 second-feet; the North Branch from 675 to 35 second-feet, and the South Branch from 160 to 16 second-feet.

There will be seven siphons, one tunnel 1,010 feet, and two wasteways on the Main Canal. The Yakima River is to be crossed by a siphon 5,158 feet long and 12 feet in diameter, with a maximum head of 305 feet. There will be four tunnels on the North Branch Canal with lengths of 1,795 feet, 1,600 feet, 1,995 feet, and 2,670 feet. Six siphons and four wasteways must be provided. On the South Branch Canal there are two siphons and one tunnel.

The recommendation for the construction of the Kittitas division of the Yakima project by Secretary of the Interior Work was based on a favorable report of the chief engineer, which estimated its cost at \$8,125,000. A portion of this sum, estimated to be \$1,710,000, is the cost of storage and surveys already incurred. The construction of this division will utilize the Tieton Reservoir which, without such development, will remain a frozen asset.

The engineering report fixed the approximate acre-cost of water but did not deal with the agricultural and economic conditions which would determine the value of water or the expense of changing this area into a section of small improved farms. In order to gather additional data a committee was appointed in June, 1924, to make an agricultural and economic survey of this project. The members

of this committee were Prof. C. F. Shaw, soil technologist, University of California; B. E. Hayden, industrial agent, Bureau of Reclamation; and Prof. George Severance, specialist in farm management, College of Agriculture, Pullman, Wash. The committee was assisted by L. T. Jessup, drainage engineer, Bureau of Public Roads, and Henry Holtz, soil physicist, Agricultural College, Pullman, Wash. The report will be reviewed by a local committee of bankers, farmers, and others consisting of Marvin Chase, State hydraulic engineer, J. Davies, Bruce Bonney, George Snodgrass, P. H. Adams, John N. Faust, F. C. Schnebey, and Frank Edes.

AGRICULTURAL CONDITIONS

The land in this division lies above and partly surrounds a body of irrigated land which has an established agriculture consisting of meadow grasses, alfalfa, clover, timothy, and grain. The soils are thin, yet the tonnage of hay is satisfactory and the yields of grain are exceptionally high. This is a hay and grain region. The returns from these farms give a good basis for estimating the returns from the lands proposed to be irrigated.

Of the area 6,626 acres are public land and 79,344 acres are owned by individuals and corporations in areas varying from 20 to 800 acres, but usually in tracts of 80 to 320 acres. The Northern Pacific Railroad Co. owns 5,242 acres and the State of Washington 1,847 acres. Because of the large percentage of land in private ownership the arrangements for administering this project have included definite agreements as to the price at which areas in excess of homestead units are to be sold. Soil, climate, and the kind of crops grown indicate that farm units should be from 20 to 160 acres each. The Kittitas division will require approximately 500 new settlers to fully utilize the land and bring it under successful cultivation.

The Northern Pacific Railroad Co. has been asked to fix a price on its lands. It is understood the company will agree that its lands shall be sold at such a price and on such terms as will be to the best interests of a planned development. The portion of the Kittitas division which is partly improved and partly irrigated could for the present be left to its owners to develop under the contract now being drafted by the Bureau of Reclamation.

The benefits to come from this development and the prompt repayment of project costs will be influenced by the measures taken to secure settlers. On the land in private ownership this task can be left to the landowners, although a coordinated plan for the colonization of surplus lands will be a valuable help. On the public and railroad land something more is needed. Everything combines to make this project an attractive place to test our methods of settlement similar to those employed in other irrigated countries. This demonstration, if made, should utilize the unimproved land in Badger Pocket and immediately east of it. It has an area of about 12,000 acres. It is remote from towns and separated from the settled and improved sections of the project. The land has an irregular surface, a part having steep slopes. This unimproved tract is unlikely to attract settlers when improved lands can be bought elsewhere on favorable terms.

To overcome these obstacles and prevent a costly delay in development the following things should be made a part of the preparation for settlement:

The rectangular Government surveys should be abandoned and farms laid out to fit the ditches and drainage channels, and also fit in with a carefully planned irrigation layout, which will minimize the difficulties of irrigation and at the same time add to the convenience of cultivation. Farm units in this part of the project should vary in size from 20 to 80 acres, to fit the topography of the country, the productiveness of the soil, and the capital and skill of settlers. The settler with children can utilize more land than one without such help who desires to specialize.

The plan also should include homes for families who expect to make the greater part of their living working for wages. Their holdings should vary from 2 to 5 acres, and should be in groups of about 10, where a common domestic water supply and other civic improvements can be shared by them. There is need for these workers and a good prospect of employment. The farm worker will need little capital if he can be helped with his house. The products from his few acres would provide much of his food supply, thus allowing much of his wages to go into improvements or savings. On the State land settlement at Durham, Calif., and in foreign countries, these workers' homes have demonstrated both the social and economic value of the idea.

Before the land is thrown open to settlement it should be cleared of sagebrush and a part planted to alfalfa, clover, or irrigated pasture. Practical farmers state that by using a power drag and doing this work before the erection of fences, the cost would be reduced about one-third. Preparatory work will give settlers more time to house their families, erect fences, get their stock and improvements together, and insure a crop income the first year.

A practical business superintendent with a knowledge of farm conditions should be employed to plan settlement and advise settlers in the selection of a farm suited to his capital, labor, and experience, and in making out a tentative program of development. This is a valuable service. It would include gathering information for settlers as to where horses, cows, and other livestock, building materials and implements, and other things necessary for farms can be acquired.

With the high irrigation costs to repay, settlers should be given liberal terms on the costs of the farms themselves. Farms should be sold to settlers on long-time amortized payments. Settlers should pay 5 or 10 per cent of the cost as an initial deposit and the balance repaid over a period of 20 years. The interest recommended is 5 per cent and the yearly amortized payments on principal 3 per cent. With such yearly payments the settler would be relieved from the fear of mortgage foreclosure and be adding each year to his equity in the property.

Farms should be valued according to location, quality of soil, and ease or difficulty of irrigation. A map should be prepared showing location of farms, valuation of each, and such information as would enable intending settlers who have not seen the area to know the reason for these prices.

An application blank should be prepared. This should state the applicant's past experience, his capital and other qualifications, and

the kind of farming he desires to follow. The opening should be advertised in State papers and in the localities from which desirable settlers would most likely be secured. The date for considering these applications should be not less than 30 days after the land is thrown open for inspection. At least two local men should sit with a representative of the bureau in dealing with these applications, and in interviewing applicants where there is more than one for a single unit.

The capital of settlers should vary with the size of the farm, and for a 40-acre farm should not be less than \$1,500. Farm laborers could be accepted without capital provided they could make the initial payment on the land and furnish 40 per cent of the cost of their dwellings and other necessary improvements. For settlers lacking money to improve their farms there should be advances of part of the cost, but so handled that it would be a service rather than a loan. Some of the very best farmers will not have money to make their farms going successes. This credit fund should be administered by the bureau, with a local advisory board.

The advantage of such advances has been tested out in many countries and is therefore by no means experimental. It is safer than the investment in canals, and will do more than is now realized to promote the repayment of project costs. Many countries have placed a limit of \$2,500 to \$3,000 per farm on such advances. Money advanced on farm improvements should bear 5 per cent interest, and the period of repayment should vary from 3 to 20 years. A 20-year loan on permanent improvements would cost the settler 8 per cent per annum, 5 per cent being interest and 3 per cent applied on principal. The money will not be loaned in the ordinary way, but will be advanced only to help pay for things needed. The following is an indication of what will be required to change sagebrush land into farms in the Kittitas division. These amounts will vary with the cost of preparing land for irrigation:

60 acres, at \$10 an acre.....	\$600
Clearing 60 acres, at \$5 an acre.....	300
Leveling and ditching, 40 acres, at \$25 an acre.....	1,000
Small house.....	750
Barn wing.....	400
Fences.....	250
Domestic well and pump.....	100
Team, plow, wagon, harrow, mower, rake cultivator, corrugator, harness, and small tools, about.....	800
Cows and chickens.....	125
Total.....	4,325

If nothing is done to prepare farms, the settler must live off his capital for at least one year, which would amount to \$600. Water charges, taxes, fire insurance, seed, labor, and miscellaneous items will absorb another \$1,000, making the total cost of the undertaking \$5,925. A settler with less than \$5,000 would become hopelessly involved unless land preparation, credit, guidance, and advice formed a part of the program.

If the farms are sold to the settlers on the terms described, 40 acres prepared and seeded to crops in advance of settlement, and loans made amounting to 60 per cent of the value of improvements, the farmer

can start safely with an initial capital of \$2,000 to \$2,500. Settlers can be accepted with a cash capital of \$1,500 provided they are loaned \$3,000.

To settle 12,000 acres, in 50-acre farm units, would require a revolving fund of approximately \$500,000. The inclusion of this feature will add less than 10 per cent to the money invested in the project.

The land should be thrown open in 5,000-acre tracts to insure complete compact settlement. This would give the superintendent an opportunity to help the settlers secure livestock, plan their buildings, and obtain the things needed for development without the confusion and loss which might result from throwing the whole area open at one time.

BAKER (POWDER RIVER) PROJECT

The Baker project, located in northeastern Oregon, was first investigated by Consulting Engineer Jacobs, of the Bureau of Reclamation, in 1908, and included at that time 27,000 acres. It was undertaken as a Carey Act project by the Powder Land & Irrigation Co., which proposed the reclamation of 65,000 acres.

A report was made on the project by Engineer C. C. Fisher in April, 1922. A board of engineers consisting of James Munn, J. L. Savage, and C. C. Fisher reviewed the report in January, 1923, and in November, 1923, a report was made on the agricultural and economic phases of the project by officials of the Department of Agriculture. This report raised a question as to the financial feasibility of the project under the existing reclamation laws.

Because of this and the importance attached to the agricultural phases and pending legislation, a new economic survey was ordered in June, 1924. The investigators were M. H. Lapham, soil technologist, Bureau of Soils; G. R. Hyslop, professor of farm crops, Oregon Agricultural College; G. C. Imbrie, assistant engineer, Bureau of Reclamation; and Geo. C. Kreutzer, director of farm economics, Bureau of Reclamation. They were instructed to review the conditions that affected the solvency of the undertaking and the modifications of the boundaries of the district. Their report is to be reviewed by a local committee of bankers and farmers consisting of William Pollman, T. G. Montgomery, F. A. Phillips, W. A. Stewart, all of Baker, Oreg. The conditions which will confront these investigators are as follows:

The irrigable area of the project is 26,931 acres, of which 45 per cent, or approximately 12,119 acres, is public land and 14,812 acres are owned by 61 individuals in areas varying from 40 to more than 1,000 acres.

Owing to the elevation, which is 3,000 feet, agriculture will be restricted to crops which will mature in a short-growing season. These crops can be best utilized by feeding them to dairy cows, hogs, sheep, and poultry. The income may be supplemented by growing cash crops of clover and alfalfa feed and other specialties. The farm units should be moderate sized, varying from 60 to 80 acres. Commercial fruit production is unlikely, owing to shallow soil and to frosts.

The topography of the country is broken, with steep hillsides. The benches are rather smooth, but the soil is shallow. On the hillsides the soil is deeper, and with careful irrigation will produce larger

yields than much of the bench lands. The cost of canals and reservoir needed to supply water to the project will be approximately \$4,000,000, or about \$160 an acre.

To meet these conditions the Baker project should be settled by men of experience, who possess or can obtain sufficient capital to clear the land, plant it to irrigated crops, and bring the farms to full production soon after the canals and ditches are completed. It is difficult to conceive how this can be brought about without some plan that will go further than anything in the past. To purchase 60 to 80 acres of land, even at the low cost of \$5 an acre, plant it to irrigated crops, equip the farm with stock, implements, and buildings, and erect a small cottage of moderate cost will require a capital of \$5,000 to \$7,000. When the chances of obtaining settlers with that much capital are considered, it must be realized that well-improved irrigated land, fenced, equipped with buildings, and growing crops can be purchased in many of the Federal and private projects of the Northwest for \$150 an acre, including a paid-up water right.

Unless development goes further than the mere building of canals, and unless aid in improving farms similar to that outlined for the Kittitas division is incorporated in the settlement of the public lands, then it is not believed that suitable settlers with capital can be attracted in sufficient numbers to settle the project in a reasonable period of time. Slow settlement means a delay in the payment of the Government's investment and a possible deficit in operation and maintenance expenses.

Calling attention to these difficulties and the necessity for alleviating them is not intended to condemn the project. The lands of the Baker project are reasonably fertile and can be made to produce a gross annual return of \$30 an acre. The project is suited to diversified farming and a prosperous dairy industry can be built up. It is highly suited to the production of clover and alfalfa seed and other specialties. The first thing needed is to convert some of the steeper sagebrush land into fields of alfalfa, clover, and irrigated pasture. It will serve not only as a demonstration of what can be done, but will give the new settler feed for his stock and a return the first year instead of waiting until the second or third year for this return, as is usually the case under unplanned settlement. This need be done only as fast as settlement demands it. A settler buying a farm, of which one-half is already producing, will know what can be done and will have the satisfaction of earning money from the land as soon as he takes possession.

Since agriculture probably will be built around the dairy industry, the settler will need cows, a small barn, a few breed sows, implements, and a dwelling. Clearing, leveling, and seeding to crops probably will cost from \$25 to \$40 an acre. This can be done by the Government and turned over to the settler at cost, a portion of which should be paid in cash and the balance on terms with 4 per cent interest. The settler will need some advances to complete the development of his farm.

With these things provided, many men with small means, who can not purchase farms elsewhere, will become purchasers of these lands and the project should be settled in a reasonable time. The total additional cost to the Government of providing these things will be not more than \$40 an acre, or \$3,000 a farm. In some cases

less will be needed. The reasons that justify providing money for farm development at Kittitas apply with greater force to the development of the Baker project. It is recommended that the 14,000 acres of public land be colonized in this way. The cost will be approximately \$600,000, which is about one-seventh the cost of building the irrigation works.

The price of the excess privately owned land should be fixed before development begins. The bureau should cooperate with the owners of this excess land, promoting settlement in every practicable way.

OWYHEE PROJECT, OREGON-IDAHO

The Owyhee project is located in the valley of the Owyhee River in eastern Oregon and in the vicinity of Homedale, Idaho, and includes 183,127 acres. It is estimated that 139,560 acres of this area are irrigable, 80,960 acres of which are new lands wholly undeveloped, 46,600 acres receive water from the Snake River by means of electric pumping plants, and 12,000 acres are under the privately owned Owyhee ditch requiring stored water to supplement their water supply.

The natural run-off of the Owyhee River will be supplemented by a large holdover storage located at the diversion dam site. A main canal with a capacity of 2,500 second-feet is required on the east side of the Owyhee River. It will begin at the diversion dam and extend a distance of $7\frac{1}{2}$ miles. The topography along this line is rough and steep, and there will be seven tunnels from 700 to 8,800 feet long in a distance of 4.66 miles. One large siphon will be required to convey water across a canyon 800 feet wide and 220 feet deep.

The Mitchell Butte Canal branches off at the end of the main canal and crosses the Owyhee River in a siphon 250 feet long under a 275-foot head for nearly one-half its length. A tunnel 4,800 feet long is required on the west side of Mitchell Butte. The canal then runs through a rolling country to Vale Butte, about 65 miles from its head end. It then crosses Malheur River in a siphon between 2 and 3 miles long, of which about two-thirds will be under a head of 225 feet. The canal then follows along the slopes for about 30 miles to cover the Dead Ox Flat area and ends near the Snake River opposite Weiser, Idaho. The capacity will be about 1,200 second-feet at the head, decreasing to 25 second-feet at the lower end. The construction, although heavy, is not difficult except for the tunnel and two siphons mentioned. The location generally is in safe ground.

The Succor Creek Canal branches from the main canal to supply lands lying in both Oregon and Idaho. The first 13 miles will be through rough country requiring six tunnels of from 950 to 8,000 feet in length, a total of 3.6 miles. About $1\frac{3}{4}$ miles of the canal will need to be lined. Beyond this the topography and formation are favorable, except for the crossings at Alkali and Succor Creeks which will require flumes or siphons. A tunnel 800 feet long is needed to reach the Squaw Creek country. This canal is about 72 miles long and presents no unusual construction difficulties, except as noted, and is generally in a safe location.

The cost of constructing the works has been estimated at \$16,800,000 divided as follows: \$25 an acre on lands under Owyhee ditch, \$117 an acre for lands now served by pumps, and \$137 an acre

for the new lands. The final estimates are not complete and the above estimates probably will be altered.

A committee was appointed in June, 1924, to make a land classification and to consider the agricultural and economic phases of the project. This committee, consisting of Prof. W. L. Powers, soil technologist, Oregon Agricultural College; Prof. G. R. McDole, soil technologist, University of Idaho; Prof. M. R. Lewis, agricultural engineer, University of Idaho; and A. T. Strahorn, soil surveyor, Bureau of Soils, is to determine the irrigable acreage, classify the lands in accordance with its productive capacity, estimate the gross annual crop returns when the land is irrigated, and submit a program for settling the large area of undeveloped land. The committee is assisted by F. O. Youngs, scientist in soil survey; Dr. R. E. Stephenson, soil technologist, Oregon Agricultural College; J. C. Marr, senior drainage engineer, Bureau of Public Roads; E. O. Larson and W. H. Blackmer, assistant engineers, Bureau of Reclamation. The report will be reviewed by a local committee consisting of Ivan E. Oaks, engineer, of Ontario, Oreg.; H. B. Cockrum, banker, of Ontario, Oreg.; and Dick Tensen, farmer, of Nyssa, Oreg.

Part of the Owyhee project is irrigated, developed, and settled, and part is wholly undeveloped. It is therefore essentially two projects. One consists of 58,600 acres, of which 46,600 acres are in the Kingman, Shortline, Ontario-Nyssa, Advancement, Payette Slope, Crystal, Snake River, Slide, and Gem irrigation districts, which are supplied with water by pumping from the Snake River, and 12,000 acres are under the Owyhee ditch. Some of the irrigation districts have bonded or other indebtedness. The owners of the land desire gravity water because it is cheaper than pumped water. The other project consists of 80,960 acres of sagebrush land, uncultivated, without settlers, and with no irrigation facilities.

Two plans of development are proposed. One is that the Government buy the existing distribution systems of the irrigation districts, except the Owyhee ditch, and amalgamate the irrigated land with the unirrigated land into one large irrigation district. The other plan is that the irrigation districts and the Owyhee ditch purchase water from the Government under the Warren Act and each operate its own irrigation system, as at present, and the Government construct the irrigation works for the undeveloped land and settle and develop it as a bureau project.

It is the policy of the bureau to turn projects over to the water users as soon as possible. The second plan described for the development of the Owyhee project is in agreement with this policy and therefore is the one favored, whereas the original estimates contemplated taking over the existing works of the irrigation districts and transferring their operation to the Government. The estimates given in this report are based upon the construction of canals large enough to supply water to the existing irrigation districts but do not include the construction of any irrigation or drainage works within their boundaries.

The undeveloped land of the Owyhee project is fertile, and profitable agriculture under irrigation seems assured. The settlers on improved farms should be able to meet the Government's charges.

The outstanding problem of this project is closer settlement; from 1,400 to 1,600 families will be needed to settle the undeveloped land.

Its feasibility requires that complete plans for settlement and farm development of both public and private land be made and agreed to by private landowners before construction is begun.

VALE PROJECT, OREGON

The Vale project is located in the vicinity of Vale in eastern Oregon; water for the project will be the surplus run-off of the Malheur watershed, with storage in Warm Springs Reservoir, which has already been constructed by the Warm Springs irrigation district and which has a large surplus capacity over the requirements of the district. The district has offered to sell any part of the surplus storage capacity desired by the Government at \$8 an acre-foot, which is a reasonable price.

The plans contemplate a diversion dam, about 1 mile west of the Namorf Railway station, in the Malheur River, from which the canal will take water. For the first mile the canal will be located on the north side of the river, then cross to the south side to avoid the railroad. The line for 4 miles parallels the river on the south side and crosses the river again. Two miles are along steep canyon slopes; bench flume or concrete-lined sections will be required for much of this distance. Beyond this the canal location is through rough country requiring a number of expensive flumes, culverts and siphons, some lined sections, and three tunnels totaling 4,250 feet. After the canal reaches the benches the location improves and construction becomes less difficult. Although construction everywhere entails difficult and expensive work, the canal system will be on safe ground.

The cost of purchasing the required storage and constructing necessary canals, ditches, and drainage works is estimated to be \$3,587,300, or an average of \$126.50 an acre. Final estimates may slightly alter these figures.

A committee to review the economic conditions which affect the solvency of the project was appointed in June, 1924. It is composed of the following members: Prof. W. L. Powers, soil technologist, Oregon Agriculture College; W. W. McLaughlin, irrigation engineer, irrigation investigations; and G. H. Hogue, assistant engineer, Bureau of Reclamation. Their report is to be reviewed by a local committee of bankers and business men, consisting of Ralph Holte, D. Biggs, and R. DeArmand, all of Vale, Oreg.

The lands of this project are mainly sagebrush benches between Jamieson and Malheur Canyon and Harper Bench, having an area of 28,350 acres, classified as follows: Thirteen thousand nine hundred and sixty acres of class "A" land, which is almost level sagebrush, very desirable for irrigation both as to surface and soil conditions; 11,370 acres of class "B" land, which is sagebrush bench lands having a more rolling surface, a more remote location, or imperfect drainage; 3,020 acres of class "C" land, which is less desirable than class "B." The soil is generally of good depth and suited to the production of alfalfa, small grains, clover seed, hay, potatoes, and beans. The gross annual crop returns with irrigation should be about \$35 an acre.

Thirty-eight per cent of the land is held by two land companies, 15 per cent is public land, and the remaining lands are owned by individuals in tracts of 40 to 640 acres. Ninety per cent of the lands will require subdivision and settlement, and will provide farms for

250 to 300 families. The land in private ownership, which comprises 85 per cent of the whole, is undeveloped and unsettled; owners generally live elsewhere, and could not be consulted regarding their agricultural intentions if the project is carried out. A few letters received from landowners by the bureau officials at Boise stated their willingness to sell the unimproved land at \$5 to \$7.50 an acre. Some state that they intend to subdivide and sell as quickly as possible, but unless there is an appraisal and selling prices are fixed before development begins and this appraisal is made a part of the contract with the land owners, one of two things will happen: There will be a bitter controversy over the attempt to control prices by the bureau; or the inflation of land prices, which has taken place in the past, will be repeated here. Before construction begins, therefore, an irrigation district should be organized and a definite contract entered into with the district, which will control land prices.

This contract will not of itself insure prompt and satisfactory settlement or the solvency of this undertaking. The money to pay project costs and operation and maintenance expenses will have to be earned from the land by people who are not now on the ground. Some plan for the orderly settlement of the 15 per cent of public land and the 85 per cent of the area owned by individuals or corporations must be worked out and put into operation. Without this, development will be slow and payments in the early and critical years will be small. The feasibility of this project depends upon plans adopted for prompt settlement and agricultural development.

Enough is known of the committee's investigation of economic conditions to warrant the statement that they regard settlement as the fundamental problem of this project and that their recommendations will include the following:

1. That long-time credit be extended to new settlers.
2. That a competent agriculturist be employed to aid and assist the settlers.
3. That the Secretary of the Interior fix the prices at which excess holdings are to be disposed of to settlers.
4. That provision be made for clearing and preparing a portion of each farm unit by the Bureau of Reclamation prior to settlement.
5. That settlers be selected in accordance with their experience, capital, and other desirable characteristics.
6. That one irrigation district be formed to include all the lands in the proposed project.

If development can be carried out in accordance with the settlement plans outlined above, and in conformity with the recommendations of the advisory board for classification of land and repayment of construction charges based on crop returns, the Vale project is regarded as feasible and desirable.

SPANISH SPRINGS EXTENSION, NEWLANDS PROJECT, NEVADA

The water supply for this extension will be obtained from the Truckee River with storage in Spanish Springs Reservoir. The feed canal diverts from Truckee River about 5 miles above Reno and will have a total length of 12.85 miles and a capacity of 636 cubic feet per second. The reservoir is to have a capacity for ultimate development of 307,000 acre-feet, with a dam 116 feet high. The first development requires a capacity of 100,000 acre-feet. An outlet canal

from the reservoir discharges into Truckee River, whence the water is diverted at the existing Derby dam of the Newlands project and carried 6 miles in the present Truckee Canal to the point of diversion for land in the vicinity of Wadsworth.

Part of the lands in the Truckee area is to be served direct from the present Truckee Canal. The irrigable area is classified as follows: Truckee division, including Hazen Bench, new lands, 21,073 acres; Pyramid division, 25,023 acres; total 46,096 acres. This area is interspersed with 4,107 acres of developed private and Indian lands which must be deducted, leaving a net irrigable area of approximately 42,000 acres.

There are in addition 7,235 acres of old lands in the Newlands irrigation district in need of additional water, which will be provided by this reservoir. The total estimated cost of this extension is \$6,044,000, or approximately \$144 an acre.

Construction of the reservoir and subsidiary works will salvage the large investment in the Truckee Canal, and will be of great benefit to settlers on 7,235 acres under this canal who are short of water.

The area to be developed is adjacent to Reno, the largest city in Nevada, through which the Truckee River flows. Development of the water resources of this stream and the settlement of adjoining lands in the Spanish Springs extension will have unusual value to Reno and the State of Nevada.

Nevada has a limited population. It has a low rainfall, and much of its area is used only for livestock ranges. The production of forage crops under irrigation greatly supplements the livestock industry. Part of the land is occupied by settlers who need a supplemental water supply, a part is public land, a part is owned by the Southern Pacific Co. In order to keep its land from falling into the hands of people who might not be farmers, and thus retard development of the project, the Southern Pacific Co. has withdrawn these lands from sale and offered them to the Government at a nominal price. The purchase of these lands by the Government would save the project from the evil effects of speculative inflation in land prices and permit a united plan of colonization and farm development to be formulated for the entire area.

A committee was appointed in June, 1924, to examine the lands and report on the economic and agricultural conditions of the extension. The members of the committee are Prof. David Weeks, University of California; Prof. Robert Stewart, dean of agriculture, University of Nevada; Dr. F. B. Headley, Bureau of Plant Industry, Department of Agriculture; Prof. C. W. Creel, director of agricultural extension, University of Nevada; and Prof. S. B. Doten, director of the Nevada Experiment Station. After the committee has reached its conclusions, its report is to be submitted to a group of business men consisting of bankers, farmers, and others familiar with the cost of developing raw land. This group consists of the following citizens of Nevada: George Wingfield, W. J. Harris, W. A. Shockley, W. H. Simmons, and J. Sheehan.

Enough already has been learned to indicate that the committee's report will be favorable. The conclusions show that a farm unit on first-class land should be about 50 acres and that the conditions of climate and soil will permit the production of a considerable variety of agricultural crops, including small grains, alfalfa, clover and grass

pasture, potatoes, onions, cantaloupes, and small fruits, and that the agricultural development should be based on the dairy industry supplemented by home flocks of poultry, a few hogs, and some cash crops.

The committee estimates that the cost of changing 50 acres of sagebrush into an improved farm is from \$7,000 to \$9,000, and the cost of clearing, leveling, and constructing farm ditches is from \$40 to \$60 an acre. Owing to the high acre cost of water, the necessity of growing crops as soon as possible after water is provided, and the scarcity of settlers with sufficient capital to completely develop and equip the farms, the committee will recommend that the cost of clearing and leveling land be included as part of the construction cost. This feature will add approximately \$50 to the acreage cost of the project.

The committee's report will be completed before this project is to be considered by Congress

SALT LAKE BASIN PROJECT, WEBER-PROVO DIVISION

The first work to be undertaken in the Salt Lake Basin project will be the construction of Echo Reservoir, with a capacity of 74,000 acre-feet. The reservoir site is about 1 mile east of Echo. Lincoln Highway and the Park City Branch of the Union Pacific Railroad traverse the entire length of the reservoir bed. The construction of the reservoir will involve the reconstruction of part of the branch railroad and a considerable length of the Lincoln Highway.

The dam will be about 150 feet high, about 1,300 feet long, and contain nearly 1,500,000 cubic yards of embankment material. It will be of the earth-fill type, with upstream slope faced by rock for protection from wave action. An abundance of suitable material for the dam is located on the west side of the river.

It is also proposed in connection with the first division of the Salt Lake Basin project to construct a diversion canal heading in the Weber River at high altitude and crossing the divide to Provo River for the purpose of diverting some of the surplus waters of the Weber into the Provo watershed. The two streams are separated by an old flood plain some 8 miles wide, and it is an easy matter to divert the waters of either river across the plain to the other. The diversion canal will have a capacity of about 1,000 second-feet and will be about 10 miles long.

The irrigable land of both valleys is settled and in a high state of cultivation. The farms are small and largely devoted to the growing of sugar beets, fruits, and vegetables for factories and local consumption. Intense culture makes a dependable water supply for late irrigation of prime importance. Reservoirs to regulate the stream flow offer the only means by which this can be assured. Farmers in the two valleys have expressed a strong desire for this storage and a willingness to pay the entire cost. Contracts for this water are being prepared. The benefits and returns will follow immediately on completing the storage. It is regarded as among the most meritorious of all the projects yet undertaken.

A committee consisting of the following members has been appointed to review and report on existing conditions: Lloyd Garrison, State engineer of Utah; William Green, engineer, Bureau of Reclamation; J. R. Alexander, district counsel, Bureau of Reclamation.

CLASSIFICATION OF LANDS OF PROPOSED PROJECTS

The total irrigable area of the proposed projects described above is classified as to public, private, railroad, and State land in the following table:

Classification of acreage, proposed projects

Project	Total irrigable	Public	Private	Railroad	State
Owyhee.....	139,000	18,000	116,000	-----	5,000
Vale.....	28,000	4,000	24,000	-----	-----
Baker.....	27,000	12,000	15,000	-----	-----
Kittitas.....	70,000	5,000	60,000	4,000	1,000
Spanish Springs.....	42,000	15,000	23,000	4,000	-----
Salt Lake Basin (first unit).....	110,000	-----	110,000	-----	-----

¹ Includes 3,000 acres of Indian lands.

COMPLETION OF EXISTING PROJECTS

In general the extension and completion of existing projects should be given preference over the adoption and commencement of new ones. There are a number of compelling reasons for this. Under present law the Federal reclamation work is limited by the resources of a special fund in the Treasury known as the reclamation fund. To add new projects spreads the available funds and efforts over too large a program for the most effective and economical work. For each project a certain overhead organization and expense are necessary. With the funds spread thinly over too many projects this overhead must be carried for years longer than is necessary, with consequent increase in total costs. After the works are built their operation, involving delivery of water and other dealings with the farmers, requires different kinds of talent. If the construction work is dragged along concurrently with the maintenance and operation of project units it is necessary to have both construction and operating forces with extra cost and division of interest.

On some of the projects partially completed there are units or divisions where no canals have been constructed or where ditches are available but storage is lacking. In the one case no water can be served, in the other only a partial supply. In either case the Government has a substantial investment from the reclamation fund tied up in storage or in canals with repayment deferred. Water, if served at all, must be peddled on a basis of annual water rentals, which charges are for the operation alone and commonly do not fully meet even that expense. If settlers are on the lands, they are handicapped by lack of water and on a limited agriculture, using dry farming operations where the rainfall permits. Such conditions produce no return on investment but lead to criticism of the Government and develop a type of agriculture that can not succeed.

Such conditions are illustrated by the situation on the Greenfields Bench of the Sun River project in Montana. Canals have been built for 60,000 acres, but the required storage reservoir has not been built. Settlers have come and gone. Many for a time thought that irrigation was undesirable, discouraging the Government from carrying on the project more vigorously. But the present settlers are virtually unanimous in an appeal for completion of the project

and meanwhile occupy a sorry position, carrying on an extensive type of farming, using some flood water but largely depending on the meager and uncertain rainfall of the semiarid region. The lands are heavily mortgaged, including the Government lien for construction charges. Until the work is more nearly complete the amount of this lien is unknown and the settlers are hampered in financing operations. In such a situation the United States should proceed to the completion of the project.

A TENTATIVE PROGRAM IS AVAILABLE

A program of operations during the fiscal year ending June 30, 1925, is fixed by the Interior Department appropriation act for that year.¹ Until the corresponding appropriations are made for future years no one can guarantee the construction of any particular canal, reservoir, or project. Approval of such things rests with Congress. It is possible, however, to make a tentative program.

The accretions to the reclamation fund, although not precisely determinable in advance, are by law limited to certain specific items, and experience gives a fairly accurate guide for estimating the money to be available. From records of past receipts over a considerable term of years it seems clear that the money available for new work will not exceed a million dollars a month. To complete the projects already in hand would readily absorb such funds for a decade. This is shown in the adjoined table, which sets forth a tentative program for the use of such funds, the completion of existing projects, and the construction of those new ones that seem to be on the threshold of approval by Congress, as indicated by action on the pending deficiency bill. This of course does not include all the new projects that are under consideration. Nor does it cover all features and possible extensions of old projects, but in general it harmonizes water storage with distribution facilities and brings the development to the point where construction may be regarded as complete so far as work by the Government is concerned.

The list of works needed to complete existing projects does not include all that have been recommended for consideration. The people under the Carlsbad project desire additional storage, and another reservoir is being urged for Orland. Doubtless suggestions for other extensions and additions will be forthcoming by the publication of this tentative program.

¹ Act of June 5, 1924 (43 Stat. 415).

Tentative program of future work

Old projects	Tentative program by fiscal years										
	1925	1926	1927	1928	1929	1930	1931	1932	1933	After	
Yuma.....	\$570,000	\$75,000	\$38,000								
Orland ¹	2,000	2,000	3,000								
Grand Valley:											
Original.....	183,000	28,000				\$430,000					
Orchard Mesa.....	232,000	200,000									
Uncompahgre.....	15,000	23,000	7,000								
Boise:											
Arrowrock ²	130,000	70,000	78,000	\$163,000	\$120,000						
Hillcrest.....	450,000	³ 865,000	500,000	500,000	1,000,000	1,000,000	\$1,000,000	\$468,000			
Black Canyon.....	200,000	19,000	140,000								
Minidoka.....											
North Side Unit ⁴				1,250,000	1,250,000	1,250,000	1,250,000	1,250,000	\$1,250,000	\$1,261,000	
American Falls Reservoir.....				412,000			7,000				
Hundley.....	675,000	627,000	1,000,000	20,000	10,000	10,000					
Milk River.....	100,000	68,000	20,000	160,000	113,000	800,000					
Sun River.....	245,000	11,000	180,000	1,315,000	1,397,000						
Lower Yellowstone.....	100,000	³ 561,000	874,000	83,000							
North Platte.....	35,000	105,000	80,000								
Newlands ⁵	1,095,000	³ 900,000	900,000	1,024,000	50,000	30,000					
Carlsbad ⁷	635,000	285,000	641,000	122,000							
Rio Grande.....		20,000	50,000								
Williston ⁸	452,000	400,000	371,000								
Umatilla.....											
Klamath ⁹	900,000	800,000	730,000	215,000	290,000						
Belle Fourche ¹⁰	615,000	446,000	159,000								
Okanogan.....	100,000	100,000	100,000	270,000	100,000						
Yakima:	20,000	19,000									
Storage.....	400,000			150,000	500,000	500,000	1,000,000	500,000			
Sunnyside.....			136,000								
Tieton.....	10,000	10,000	7,000								
Kittitas.....		³ 750,000	1,250,000	1,750,000	1,750,000	652,000					
Moxee ¹¹											
Roza ¹¹											
Kennewick ¹¹						2,000,000	2,000,000	3,460,000	4,000,000	7,368,000	
Riverton.....	650,000	790,000	800,000	800,000	800,000	800,000	800,000	800,000	286,000		
Shoshone.....	360,000	304,000	353,000								
Heart Mountain.....											
Oregon Basin.....	5,000									10,237,000	
Total, old projects.....	7,579,000	7,483,000	8,704,000	8,427,000	7,385,000	7,481,000	6,057,000	6,475,000	5,536,000	18,866,000	

NEW PROJECTS

Spanish Springs ¹²	750,000	750,000	750,000	750,000	845,000	691,000	1,000,000	1,516,000	
Baker	450,000	750,000	500,000	750,000	500,000	1,000,000	1,000,000	1,516,000	
Vale		500,000	500,000	500,000	500,000	1,000,000	2,000,000	2,500,000	
Owyhee		750,000	750,000	750,000	1,250,000	2,000,000	2,000,000	2,500,000	6,500,000
Salt Lake Basin ¹³		1,500,000	800,000	900,000	1,200,000	1,000,000	2,500,000	2,500,000	(14)
Total, new projects	450,000	3,300,000	3,400,000	3,400,000	4,700,000	4,085,000	5,691,000	6,516,000	14 6,500,000
Grand total	8,029,000	11,733,000	11,827,000	12,085,000	12,085,000	11,576,000	11,748,000	12,052,000	25,366,000

¹ Does not include supplemental storage for which studies are being made.² Does not include funds to be advanced to later users for drainage.³ Part or all included tentatively in supplemental estimate for 1926.⁴ Cost of storage included under American Falls.⁵ Includes \$385,000 for Spanish Springs storage for Truckee lands.⁶ Does not include \$245,000 for drainage duplicated in 1926.⁷ Does not include additional storage which may be needed.⁸ Recommended for sale.⁹ \$300,000 1924 contract liability for Gerber Dam not included.¹⁰ Nine-mile extension not included.¹¹ Order of development not decided.¹² \$385,000 additional included in Newlands project.¹³ Additional amount may be needed depending upon units selected.¹⁴ Indefinite.

EXPLANATION OF PROJECT NEEDS

Yuma project.—The Main Canal goes through the Picacho (dry) wash. There have been heavy floods down this wash on several occasions, filling up the canal with débris, and it has taken several days to clean out the canal and repair the breaks in its banks. Although no material damage has been done to crops due to these floods in the past, severe damage is likely to occur and the water users have asked that a structure be placed in the canal permitting the floods to pass over. Plans have been prepared and this matter will be submitted to the water users for a vote for supplemental construction.

Power is now being purchased for pumping water to the Yuma Mesa Auxiliary project, also for the Boundary drainage pumping plant and for shop and canal purposes at Yuma. Congress has authorized the construction of a power plant at Siphon Drop in the Main Canal of the project, provided a suitable contract can be entered into with the water users guaranteeing the return of the costs. Such a contract will be submitted to them for their approval.

The balance of the estimate is to complete the Yuma Valley drainage system, now under construction.

Orland project.—A small amount is required to complete the lining of laterals on the Orland project. This is covered in the contract with the water users to repay the cost of the project.

On account of the extreme drouth in 1924 the water users have requested that additional storage be provided at the Millsite Reservoir. Estimates were made a few years ago of the cost of building a dam, and water supply studies are now being made to show what additional water the project would have had this year, provided the Millsite Reservoir had been built and was available for storage during the past several years. Inasmuch as these studies have not been completed and as this reservoir was not contemplated originally as a part of the project, no estimate is now included for it. It may, however, be found advisable to build such a reservoir later on.

Grand Valley project.—It is proposed to complete the canal laterals and drains on the Gravity division of this project. The plans also contemplate the construction of a pumping plant to pump water onto about 10,000 acres of land. This will require a lateral system. The amount of money requested for the Orchard Mesa division for 1926 will complete that division of the project.

Uncompahgre project.—A small sum is estimated for lateral extensions and payments for vested rights.

Boise project.—When the public notices were issued for the Boise project, allowances were made for certain canal betterments. A large part of these improvements is for the lining of the main canal and the rebuilding of some of the structures. In draining the project certain outlets will be required outside the limits of the project and this is estimated for. The Meridian pipe line is proposed to water 455 acres. It has been planned to pump water onto several small areas in the project by developing power at canal drops.

The Hillcrest division contains 14,000 acres of land located just above the main canal near the city of Boise. Storage has been provided for this area in the Arrowrock Dam Reservoir, and a portion of the diversion dam has been charged against this unit, as well as a portion of the diversion dam power plant. The cost of these features

will remain a frozen asset until the pumping plant and canal and laterals can be constructed for this division. The lands are of excellent quality. Hence an appropriation has been recommended for completing this division in the fiscal year 1926.

The Black Canyon division of the project, containing 56,000 acres, has been investigated and the diversion dam for it has been completed. The table suggests funds to begin the construction of this division in the fiscal year 1927. Congress has already authorized the construction of a power plant at the Black Canyon Dam, which will be used first for pumping water for the Gem district (provided suitable contracts are entered into) and later on used for pumping to lands in the Black Canyon district.

Minidoka project.—The South Side Minidoka project requires some additional water, and \$200,000 has been appropriated for the purpose of enlarging the canals and improving the efficiency of the pump runners so that additional water can be pumped, and it is proposed to do this additional work this coming winter provided a satisfactory contract can be made with the water users to cover the cost. About 1,400 additional horsepower is highly desirable for the project in order to give good service during the height of the irrigation season. For that reason \$140,000 has been put in the estimate as the cost to complete that project, and to purchase an interest in one of the power units which it is hoped will later be installed at the American Falls power plant for creating power to pump water on the north side of the Minidoka project, which also calls for the construction of pumping and distribution systems.

American Falls.—Should the construction of a reservoir at American Falls be authorized with a capacity of 1,700,000 acre-feet and no additional contracts be made for storage, \$1,412,000 will be required after June 30, 1926, to be advanced by the United States. It is believed, however, that a large portion of this amount will be advanced by canal companies and irrigation districts in the Snake River Valley that require some storage water to supplement their present rights.

Huntley project.—Some of the lands within the limits of the Huntley project are refractory, but it is believed that they can be utilized efficiently, as it has been shown that sweet clover can be grown on this land and after a few years grains can be successfully grown. For that reason a small amount of money has been used each year on experimental farming. A small amount of money is also recommended for canal and lateral betterments and for drainage.

Milk River project.—There have been a number of unfortunate circumstances attending this project and one has been the long delay in its completion, which has precluded the determination of costs per acre, restricting the ability of settlers to finance their operations and curbing the further settlement of the project, which it badly needs. To cure this defect it is proposed to proceed actively with the completion of the irrigation system so far as it is contemplated work will be done by the United States. This includes the completion of Sherburne Lakes reservoir and the St. Mary Canal, which requires additional pipes at points where the canal crosses drainage channels. These items are expected to cost \$479,000. For a relatively small expenditure the canals and laterals in the Malta and Glasgow divisions can be rounded out to fit the water thus provided and the program includes a round figure of \$100,000 for drainage. The project can then be regarded as complete.

Sun River project.—This project has the misfortune to be located in the transition zone between distinctly arid and distinctly humid conditions. Sentiment for irrigation wavers with rainfall. This has delayed completion of the system, and the resulting situation is a striking example of the unfortunate results of such delay—dissatisfied settlers, limited agriculture, and latent Federal investment, unproductive alike of returns to the reclamation fund and of satisfactory crops. On the Greenfields Bench division of the project canals have been built for 40,000 acres of land, but the related storage has not begun. Some flood water is delivered in the spring, but at the height of the season, in August, when water is most needed it is lacking. The mean August flow of Sun River for a recent 7-year period is 339 second-feet, whereas rights prior to the project are more than double this figure. This condition has caused heavy crop losses and deprives settlers of water just at the time needed to bring crops to maturity, a condition that will continue to be serious until the reservoir is built.

The action called for under these circumstances is prompt construction of the reservoir and other works to complete the system. This involves storage at the Beaver Creek site on Sun River, enlargement of the North Side Canal, and extension of the distribution system to 80,000 acres of land. The program tabulated includes these things; also a small amount of work remaining on the Fort Shaw distribution system south of the river and some drainage work contemplated there and on the north side.

Lower Yellowstone project.—The program estimates \$3,000 for additional lateral extension and \$300,000 for drainage. Before the drainage work can be done a suitable contract will be needed with the irrigation district.

North Platte project.—The estimates include \$1,904,000 for the Guernsey Reservoir and \$620,000 for power development at the same point. Some additional drainage will also be required on that project. The completion of the Fort Laramie division will require over a million dollars and relatively small amounts are included for distribution and drainage works on the Interstate and Northport divisions.

Newlands project.—It is still hoped that a small amount of storage can be secured from Lake Tahoe, for which \$142,000 has been estimated for outlet improvements and damages to riparian rights. Some money has been allowed for payment of damages at Lahontan and for the completion of the power plant which was nearly completed in the fiscal year 1924. Should the Spanish Springs Reservoir be constructed 7,235 acres of land in the Newlands project could secure storage from this reservoir. For that reason \$385,000 to cover the cost for this storage is included in the old Newlands project. The remaining cost of the Spanish Springs project is included under the head of new projects. Eventually additional laterals will be needed both on the Carson and the Truckee divisions of that project and about \$300,000 for drainage will be required.

Carlsbad project.—Some additional canal lining and additional drainage work should be done on this project.

Rio Grande project.—The remaining work on this project consists of completing the distribution systems and additional drainage, for which \$371,000 may be required after the fiscal year 1926. The

contracts with the districts permit the expenditure of that amount. It is hoped, however, that a considerable saving can be made so that all of the \$371,000 will not be required.

Umatilla project.—On the Umatilla project contracts with the East division contemplate an expenditure after June 30, 1924, of \$327,000 and on the West division of \$163,000. Districts have been formed embracing the lands under the Western and Furnish Canals of the Umatilla project and some additional lands adjacent thereto. A contract is now being considered with the Westland district, embracing the area for an improvement of the Western Canal system and the construction of some additional laterals. If this contract is entered into, \$245,000 will be required; \$290,000 will be similarly required for laterals under the Furnish Canal, but no contract has yet been made. The bureau is now constructing a dam for the McKay Reservoir for which \$1,940,000 will be required after June 30, 1924.

Klamath project.—Operations on this project exposed the bed of Tule Lake for cultivation which requires irrigation and drainage, which accounts for \$1,160,000 of the estimate to complete the project. There is some canal enlargement for the benefit of lands to be reached by pumping and some additional construction on the irrigation system in Langell Valley.

Belle Fourche project.—No construction work has been done recently on this project but a part known as the Willow Creek extension has never been completed. This and funds for drainage complete the program.

Okanogan project.—This has virtually been completed for years but owing to water shortage additional expenditure is desirable for lining canals or pumping facilities and other provision to improve the service.

Yakima project.—The Tieton Reservoir is well toward completion, which is an essential part of the program, and further work is needed on the Kachess Reservoir wasteway, but the largest item of storage is a new reservoir on Lake Cle Elum.

On the existing distribution divisions there is work on the Mabton pumping area. Some minor extensions in lateral lining will probably be done on the Tieton and a small amount of money is included in the program for Granger and Outlook district laterals.

Riverton project.—The canal and lateral systems will require an additional \$3,798,000 according to present estimates, including the current appropriation. With the distribution system thus completed storage is contemplated at Bull Lake and Pilot Butte Reservoirs; \$1,600,000 is included for drainage, \$144,000 for power development, and \$131,000 for miscellaneous construction.

Shoshone project.—The Garland division is complete except for additional drains which are expected to cost \$376,000. Frannie division drainage is included at \$158,000. On the new Willwood division additional work on the canals as well as drainage is included at \$483,000. The project is susceptible of extension to the Heart Mountain and Oregon Basin divisions, but the funds for these are set down in the last column of the table because the order of development has not been fixed.

LEGAL ACTIVITIES

The law work of the Bureau of Reclamation is not easily comparable with that of any other Government bureau. The statutes under which the bureau functions blaze new and unusual trails, with little of legal precedent as a guide. The general water law of the West is not yet out of the formative period, and the special laws relating to Federal irrigation, consisting of nearly 100 separate statutes, are still more experimental. Through an investment of approximately \$143,000,000 in Federal irrigation works the bureau has a contractual relation with upward of 35,000 individuals. This is not the ordinary impersonal Federal relation, but the very difficult one of creditor and debtor. The usual situation is not present in which the adjustment of a disagreement is in the discretion of a Government official, but one in which cooperative action is essential.

Through the construction and operation of two dozen costly irrigation projects in 15 States with different laws, many unusual and complex situations develop. The building of cement works, power plants, railroads, and towns adds to the problem. If the recommendations of the Committee of Special Advisers on Reclamation are enacted into law, there will be further additions to the problem. There is probably no other bureau of the Government that has proportionately so large, unusual, and complex a legal burden as the Bureau of Reclamation.

The law work in the field is carried on by attorneys known as district counsel who are assigned at the present time to seven districts, each embracing a group of projects. These district counsel act as the legal advisers of the several project officials and their respective districts and help settlers to understand their legal relation to the Government. This is an important matter where so many conditions are strange and new. In the Washington office the law work is handled by the law adviser of the Commissioner and the solicitor of the department.

The law work involves, among other things, securing rights of way, passing upon abstracts of title, adjustment of claims and disputes, drafting of contracts, preparation of State and Federal legislation, briefing, trial of law suits, and general consultation. There are at the present time upward of 31 pending law suits. This litigation involves several million dollars and presents many unique questions of law, some of them without precedent. It includes suits on contracts, damage cases, contract confirmation proceedings, condemnation actions, and water-right adjudication suits. Technically, this litigation is in the hands of the Department of Justice, but the bureau attorneys are most familiar with it and, as a rule, carry the burden of the work of handling it. Much of this litigation is of a friendly rather than of a belligerent nature.

GOVERNMENT WATER RIGHTS

Section 8 of the national irrigation act of 1902 relates to Government water rights. It directs that the Secretary of the Interior proceed in conformity with State laws in carrying out the provisions of the act of 1902. This section is construed by the Department of Justice to be directory, in the interests of comity, but not mandatory. However, so far as practicable the Bureau of Reclamation complies with State requirements concerning water appropriations.

The laws of the different States do not agree with each other in regard to the manner in which rights to the use of water are established or the nature of those rights. Some of the States have no administrative control over streams. In a number of them there is great uncertainty as to the extent to which the doctrine of riparian rights applies. An attempt to follow State laws on a Government project located in two States with divergent water laws may offer unusual difficulties. Again, the laws of several of the States are in direct disagreement with the Federal statute which requires that water rights shall be appurtenant to the land. It would be very desirable if all these conflicts could be removed.

The growing use of water for hydroelectric development conflicts to a certain extent with the use of water for irrigation, and there is need that a general program be approved under which rights to these two uses would be carefully defined that serious injury may not later result.

So long as the water supply for a project is ample there is usually little need of securing an adjudication of rights on the stream system from which the water is supplied. This is generally true during the early years of a project before it is fully developed and use made of all of the water which it claims, although there are cases where early adjustments are desirable to prevent private claims from later being enlarged to unwarranted dimensions. However, there is certain to come a time after development is well advanced or completed when it is necessary to measure carefully the claims made by the different appropriators on the stream system. This is done through an adjudication proceeding in which all parties in interest are brought into court and their rights judicially determined. Sooner or later such a determination will be necessary as to most, if not all, of the projects.

Heretofore the bureau has been interested in adjudication proceedings affecting the Umatilla project in Oregon, the Salt River project in Arizona, the Uncompahgre project in Colorado, the Boise project in Idaho, the Milk River and Sun River projects in Montana, and that part of the Carlsbad project in New Mexico affected by Black River.

At the present time adjudication proceedings are being carried on to determine water rights on the Carlsbad project in New Mexico, on the Newlands project in Nevada, and on the Orland project in California.

It appears likely that it will be necessary to institute in the near future proceedings of this nature to determine rights on the North Platte River in Nebraska affecting the North Platte project, on the Carson River in Nevada affecting the Newlands project, and on the Yakima River in Washington affecting the Yakima project.

In the case of interstate streams some attempts are being made to allocate by contract the waters therein according to States. A compact of this character respecting the Colorado River was negotiated at Santa Fe, N. Mex., November 24, 1922, by representatives of the States of Wyoming, Colorado, Utah, Nevada, New Mexico, Arizona, and California and of the United States. It has been formally approved by all of the States save Arizona. A similar compact concerning the use of the waters of the La Plata River has been made by the States of Colorado and New Mexico. Another respecting the waters of the South Platte River is about to be completed by the States of Colorado and Nebraska. Commissioners are now conduct-

ing negotiations looking to the making of compacts between Texas and New Mexico concerning the Pecos River; between Texas, New Mexico, and Colorado respecting the Rio Grande; and between Nebraska, Wyoming, and Colorado relative to the North Platte River. Such compacts settle water disputes between States but do not adjust conflicts between appropriators within a State. The Bureau of Reclamation is either directly or indirectly interested in all of these proceedings.

TENANTRY

The reclamation law was intended to be a home making law. Its central purpose was to create on what were naturally arid wastes new and permanent homes for citizens of the Republic. It was anticipated that those who partook of its benefits would reside upon the land and cultivate it. The principles of the public land law are opposed to tenantry, and the absentee landlord did not have a place in the picture of Federal irrigation as drawn by the sponsors of the organic act of 1902.

Nevertheless, there has at all times been a large percentage of tenants on Federal irrigation projects. In 1912 it was 21 per cent and in the prosperous years of 1917 and 1918 it rose to 32 per cent. In 1920 it was 24 per cent; in 1921, 26 per cent; and in 1922, 24 per cent. The maximum project percentage was 74 per cent on the Carlsbad project in New Mexico in 1920, and the minimum project percentage was 0.4 per cent on the Okanogan project in Washington in 1914.

There is more than one cause for this generally unhealthy condition. In some cases the relation of landlord and tenant arises from the failing health of the owner; in others, on account of removal of the owner because of unexpected business demands. However, the main causes are the ownership by single individuals of large areas when projects are authorized, and the acquiring of title through the foreclosure of mortgages made on terms the settlers could not meet. In most of these cases there is an element of speculation.

Excess holdings are prohibited by the law. The act of August 9, 1912 (37 Stat. 265), forbids the furnishing of water to such holdings and provides for forfeiture of title. Notwithstanding these drastic provisions, the Government seems to be unable to cure the trouble. Although the spirit of the law is broken, the letter of the law is observed by fictitious conveyances, and the Government is almost helpless.

In a few cases the tenant is preparing to purchase the land and make a permanent home of his own thereon. But this is not at all general, and it is quite certain our irrigation developments can never be fully successful until the present high percentage of tenantry is much reduced. This end possibly may be attained in a small degree through a more rigid and searching application of the law against excess holdings of land. However, it would seem that the real cure for the trouble must come through a better control over lands in private ownership when projects are adopted, the selection of settlers who are real dirt farmers, the furnishing to them of money for development purposes at reasonable rates, and the adoption of the plan of assistance and guidance heretofore discussed, under which conditions on the farms will be so improved that there will be a strong incentive for the owners to stay upon the land.

CONTRACTS UNDER THE WARREN ACT

Reference has already been made to contracts authorized by the so-called Warren Act of February 21, 1911 (36 Stat. 925), under which the bureau has sold permanent water rights from the projects for the irrigation of upward of 1,000,000 acres of land lying outside of the projects.

Section 1 of this act provides for the sale of such rights, "reserving a first right to lands and entrymen under the project." Section 2 of the act provides for contracts, "upon such terms as may be agreed upon." These two sections seem to be somewhat in conflict, and there has been dispute as to their meaning.

It seems to be of questionable propriety for the Government to sell a water right of an inferior nature. Apparently it is a better policy to put all Federal water rights upon the same plane. It is argued by some that the water users under the projects proper should have a better right than the water users outside of the projects. There does not, however, seem to be any good reason to uphold this position. The Warren Act contractors outside of the projects pay in full for what they get in the same manner as do the water users under the projects. Moreover, in some cases they actually advance the moneys with which to construct irrigation works to provide for the additional water supply, instead of letting the Government advance the money and paying it back in 20 years without interest.

Contracts under the Warren Act are now rather generally being made under section 2 of the act, and provide for rights having the same priority as those on the project from which the water is sold.

DISPOSAL OF UNSUCCESSFUL PROJECTS

The Hondo project in New Mexico and the North Dakota pumping project in North Dakota have proved to be unsuccessful and should be disposed of by the Government.

The Hondo project was authorized in 1904, and on June 30, 1924, involved an investment of about \$372,000. It was intended to irrigate an area of about 10,000 acres from storage on the Hondo River. The reservoir could not be made to hold water and the Government has abandoned operation.

The North Dakota pumping project in North Dakota was authorized in 1906 and was intended to irrigate about 26,000 acres with water pumped from the Missouri River. On June 30, 1924, the Government investment was about \$1,146,000. The high cost of irrigation water due to pumping, and the low value of irrigation water due to the rainfall, have made this development unsuccessful. Irrigation on the Buford-Trenton division was discontinued several years ago. The Williston division is still being operated, but without substantial promise of repayment of costs.

The interests of the Government in both of these projects should be sold at public auction to the highest bidder, in accordance with the recommendations of the Committee of Special Advisers on Reclamation.

OPERATIONS DURING THE FISCAL YEAR

During the fiscal year 1923-24 the Bureau of Reclamation continued the operation and maintenance of irrigation works previously constructed, built extensions and additional works in various States, and conducted investigations for further extensions and possible new developments. More detailed information regarding these activities will appear under the head of each project and statistically in the appendix of this report.

The maintenance of constructed works and their operation for delivery of irrigation water continued without extraordinary event until the close of the fiscal year when the most westerly States entered a season of unusual drouth. Most of the Government projects were well supplied with water, but at a few points serious shortage impended.

The Tieton Dam on the river of the same name in Washington, to be 244 feet high and impound 202,500 acre-feet of water, and the Black Canyon Dam in Idaho, 183 feet high to divert water from Payette River, were virtually completed. A third dam is being built on McKay Creek, a fourth on Lost River in Oregon, while specifications for a fifth on Snake River at American Falls, Idaho, are being prepared and preliminary work and negotiations are being carried on. On a number of projects canal systems were extended to additional lands and drainage channels were excavated for the protection of the irrigated areas from waterlogging.

Funds available by Federal appropriation were enhanced by cooperative arrangements with local interests for investigations in the various arid States, including two projects of a magnitude greatly exceeding any developments thus far undertaken. One of these involves storage and control of the Colorado River, on the engineering features of which the chief engineer completed a voluminous report. A report was made on the Columbia Basin project in Washington supplementing previous studies by the State.

One index of the bureau's activities during the year is the number of contracts entered into and the different subjects involved, which are summarized in the following table:

Nature of contracts	Number of contracts	Amount involved
1. Cooperative investigations.....	14	\$157,700.00
2. Supplies.....	955	1,167,577.54
3. Material.....	426	526,094.15
4. Equipment.....	193	396,365.90
5. Miscellaneous services.....	344	837,083.43
6. Construction work.....	282	1,995,710.94
7. Land purchases, including improvements.....	194	495,111.09
8. Land sales, including improvements.....	161	214,600.00
9. Leases to the United States.....	52	12,694.78
10. Leases from the United States.....	426	89,548.23
11. Compromise of damages.....	33	42,599.26
12. Rental of Government equipment.....	11	21,392.00
13. Rental of water.....	517	224,397.91
14. Sale of surplus electrical energy.....	18	147,456.50
15. Sale of water rights to towns.....	1	750.00
16. Sale of water rights under the Warren Act ¹	6	964,445.00
17. Sale of water rights within projects.....	346	1,193,695.96
18. Adjustment and relief ²	4	6,392,277.42
19. Transfer of project operation.....	0	
20. Miscellaneous.....	243	244,279.31
Total.....	4,226	³ 15,123,779.42

¹ Includes some construction work.

³ Estimated in part.

² Does not include relief given to individual water users, and includes some construction work.

In Arizona the Government-built project on Salt River continued under operation by the local water users' association, which with approval of the department has engaged on a construction program of additional water storage and power development. The bureau continued to operate the Yuma project on the Colorado River, serving lands in Arizona and California. Construction continued on the drainage system of this project and extensive repairs were made to the apron below Laguna Dam. Water was delivered to the first unit development on Yuma Mesa, where considerable progress was made in planting to citrus fruits. Extensive studies were made of further development on the Colorado River for use in Arizona and other States.

The Orland project in California continued in successful operation and some additional lateral canals were lined with concrete to conserve the water supply. The water users continued their splendid record of complete payment of irrigation charges, but at the close of the fiscal year the water supply was exhausted and the project faced an unprecedented shortage, curtailing prospective yields for the season of 1924 and temporarily endangering the unbroken record of payment. In cooperation with the State of California and local interests investigations were continued in Sacramento Basin and the bureau was represented on a board making a study of several California streams as to uses for power and other purposes.

In Colorado the Government continued to operate the Grand Valley and Uncompahgre projects, the latter under public notice, requiring installment payments of construction cost, the former on a basis of water rentals for the annual service without repayments on the capital investment. Reconstruction continued on the Orchard Mesa system, first built under private auspices and after failure taken over by the bureau as an extension of the Grand Valley project. Colorado investigations included the Badito project, the upper White River, and the Rio Grande.

In Idaho the bureau operated the Boise, King Hill, and Minidoka projects except that the Minidoka irrigation district continued to handle the operation and maintenance of the Gravity division on the last named project. On the Boise project the Black Canyon Dam was brought sufficiently near to completion to permit diversion of water to existing canals of the Emmett irrigation district. Government operation of the King Hill project has been carried on under contracts providing for this until the close of 1924 when the management may, at their option, be assumed by the water users organized as the King Hill irrigation district. Looking toward the extension of the Minidoka project and additional development on Snake River preliminary operations were continued at the site of the large dam projected to cross the stream at American Falls, where negotiations were continued for flowage rights and construction of municipal improvements were under way in the new town site made necessary because the reservoir will flood much of the old town. The extension of the work in Snake River Valley is favored by the fact that the Minidoka project has returned to the reclamation fund a larger percentage of its construction cost than any other Government project. The Dubois and Mountain Home projects in Idaho were also investigated.

In Montana the bureau continued operation of the Huntley project under public notice, the Milk River project under water rental, and the Sun River project in part under public notice, and in part on a rental basis, where canals have been built for a considerable acreage, but pending storage insufficient water is available to permit full agricultural development and make possible the return of the cost. This situation calls for additional construction at an early date to relieve the settlers and bring about a return to the reclamation fund of the investment already made. The interstate project on the Yellowstone continued under Government operation for service to lands in Montana and North Dakota. Construction work on the Montana projects was confined to lateral canals, drains, and related features. Extensive repairs were made to the apron of Yellowstone Dam.

The interstate project on the North Platte River was operated by the bureau for the benefit of lands in Nebraska and Wyoming. The Interstate division north of the river was served on a public notice basis, while water was delivered on a rental basis south of the river where the Fort Laramie Canal is still under construction though serving some lands. The excavation of this canal in open channel was completed, laterals were built for 25,000 acres, and good progress was made in driving tunnel No. 3 and in building the canal structures. The third, smaller division of the project, was completed and operated under contract with the Northport irrigation district. Farther east in the same basin the Tri-County project was studied and a report made.

In Nevada the bureau continued to operate on a public notice basis the Newlands project, which takes water from two streams, the Truckee and Carson. A small part of the project dependent solely on the Truckee has experienced numerous water shortages and the most acute of these occurred in 1924. In a very trying situation that ensued the project management labored indefatigably and tactfully. Arrangement was made to secure additional water by pumping from Lake Tahoe. Investigations were continued for possible additional storage in the Truckee Basin to relieve these lands and extend the project. A system of deep open drains was completed during the fiscal year to the extent provided by a contract with the irrigation district.

On the Pecos River in New Mexico the bureau continued the operation of the Carlsbad project on a public notice basis, involving repayment of operating expense and construction charges, which have returned a third of the first cost on this project. Additional possibilities of using Pecos River were investigated by the bureau and a commission to study the interstate aspect of the river was formed with representatives of New Mexico, Texas, and the United States. The bureau also made investigations on the Penasco and the San Juan.

On the Rio Grande the bureau continued operation, maintenance, and construction work on the Elephant Butte project that is interstate and international because some of the water stored by the bureau is delivered to Mexico under treaty. Substantial progress was made toward completion of the drainage and lateral systems of the American project. Based on the profits of previous years a large area on the project was planted to cotton and returns from this and other products

almost doubled the gross crop value per acre. Repayment to the bureau of construction installments and operating costs was promptly made by the two large irrigation districts embracing New Mexico and Texas lands.

The Williston project in North Dakota was operated, but has not paid expenses, and it is of such small importance that if its operation is continued it should be as a private project. Its appraisal and sale were recommended by the advisory board.

In Oregon the bureau continued operation of the Umatilla project under public notice and supplemental construction on lateral system, canal lining, and drainage works. Active construction was in progress on McKay Dam for extension of the project. The Klamath project lying across the Oregon-California line was operated by the bureau under public notice and additional irrigation facilities built in Langell Valley and the bed of Tule Lake, which has been exposed for irrigation by the project operations. A number of projects of interest to Oregon were investigated during the year.

The Belle Fourche project in South Dakota was operated on a public-notice basis, but extraordinary rainfall greatly curtailed the demand for water during the season of 1923 and only about 40 per cent of the lands were irrigated that year.

In Utah the bureau continued to operate the major works of the Strawberry Valley project under public notice and contracts, delivering water in bulk at the headgates of various canal companies and irrigation districts. The Mapleton and Springville districts continued their unbroken record of repaying the Government according to schedule. Extended investigations have been carried on in Utah to select a suitable project for next development.

In Washington the Okanogan project was operated under public notice. This project, like the Orland, depends on a relatively small catchment and is subject to water shortages when the snowfall is light. Resort has been had in recent years to pumping and additional canals were lined to conserve the available water supply. Owing to drouth additional water had to be acquired and pumped. Credit is due the project management for its tireless and effective work throughout the emergency. The Yakima project was operated on a public-notice basis and the construction of the Tieton Reservoir was 80 per cent completed at the close of the fiscal year, providing additional storage water the use of which depends on construction of additional canal systems. Four prospective extensions have been studied and in October a board of engineers recommended the Kittitas division for first development. Any extension will involve very expensive work, but in support of such expenditures it is pointed out that the Yakima project is a distinct success, having returned to the reclamation fund a larger sum than any other project.

Under a special act of Congress the investigation of the Columbia Basin project, previously begun by State agencies, was carried on by the bureau, and as the fiscal year closed further study was contemplated with the Federal appropriation which continued available.

In Wyoming the Riverton project, which has involved heavy construction before making water available for any land, was brought to a point where lighter work will successively extend the system to units of the irrigable lands. The Shoshone project was continued in operation for the delivery of water to the Garland and Frannie

divisions north of the river, while construction included extension of the project drainage and completion of diversion works and sufficient canals to make water available next year for some of the new Willwood division south of the river.

FINANCES

The consolidated financial tables, Nos. 1 to 18, inclusive, followed by tables for individual projects, printed in the Appendix, pages 98 to 163, reflect the financial transactions during the fiscal year 1924, and the financial condition of the bureau on June 30, 1924.

During the fiscal year an investigation was made, under direction of the Secretary of the Interior, of the accounting practices of the bureau, and an audit made of the financial accounts. The results of the audit are contained in a report to the Secretary under date of February 20, 1924. As a result of the investigation and reorganization, some changes have been made in the form of financial statements in this report from those published in the twenty-second annual report. However, to preserve the continuity of the financial data, reconciliations have been made to "tie-in" the financial data herein published with those published in the twenty-second annual report.

During the fiscal year the Indian projects—Blackfeet, Flathead, and Fort Peck—were turned over to the Bureau of Indian Affairs. No financial data are included in this annual report for these Indian projects.

FUNDS

Various funds have been made available for reclamation work. A discussion of each fund is published in previous annual reports. These funds are as follows: Reclamation fund; Yuma auxiliary fund; general investigations, Reclamation Service, 1923—December 31, 1924; increase of compensation, Rio Grande Dam appropriation; judgments, Court of Claims; Wind River Indian (Riverton); drainage and cut-over.

The financial transactions for all funds, excepting Yuma auxiliary, drainage and cut-over, general investigations, Reclamation Service, 1923—December 31, 1924, and increase of compensation applied to these appropriations, are consolidated in the general financial statement, Table No. 1, and other tables. The exceptions are classed as separate financial units, while the consolidated statements cover "reclamation fund" projects only, i. e., projects constructed and operated from the reclamation fund.

Table No. 2 is a statement of the transactions during the fiscal year of those funds which were active. Summary of Table No. 2 is as follows:

Reclamation fund:		
Balance July 1, 1923	\$4, 649, 267. 46	
Receipts fiscal year 1924	13, 155, 400. 70	
		\$17, 804, 668. 16
Expenditures, not including liabilities		12, 333, 021. 44
Balance on hand, June 30, 1924		5, 471, 646. 72
Yuma auxiliary fund:		
Balance July 1, 1923	76, 536. 78	
Receipts fiscal year 1924	43, 391. 46	
		119, 928. 24
Expenditures not including liabilities		67, 637. 74
Balance on hand June 30, 1924		52, 290. 50

General investigations:		
Balance, July 1, 1923.....	\$258,591.76	
Receipts fiscal year 1924.....	19,177.55	
Expenditures not including liabilities.....		\$277,769.31
		185,782.14
Balance on hand, June 30, 1924.....		91,987.17
Increase of compensation fund:		
Expenditures (net)—		
Applied to reclamation fund.....		282,516.49
Applied to Yuma auxiliary fund.....		1,509.90
Applied to General investigations.....		4,284.29
Total.....		288,310.68

The funds accumulated to June 30, 1924 available for "reclamation fund" projects, are summarized as follows:

Reclamation fund as per Table 3.....		\$125,905,028.21
Other funds:		
Judgments, Court of Claims.....		550,347.58
Rio Grande Dam.....		1,000,000.00
Increase of compensation (net).....		2,759,890.98
Wind River Indian (Riverton).....		359,479.65
		130,574,746.42
Advance from General Treasury.....	\$20,000,000.00	
Less amount repaid.....	4,000,000.00	
		16,000,000.00
Total, Government aid for reclamation of arid land (Table 1).....		146,574,746.42
Plus project collections.....		52,238,213.41
Total available for expenditure.....		198,812,959.83
Less cash on hand:		
Reclamation fund.....	5,471,646.72	
Wind River Indian (Riverton).....	303.61	
		5,471,950.33
Grand total expenditures, not including liabilities (Table 16).....		193,341,009.50

The item of \$52,238,213.41 represents all collections for construction and operation and maintenance repayments, water and other rentals, sales, etc. All of these collections have been credited to the reclamation fund and reexpended within congressional limitations.

Table No. 3 is an analysis of the accretions to the reclamation fund by sources and States, except proceeds from Federal power licenses, no information being available as to the States from which this fund came.

CONSTRUCTION COST AND REPAYMENTS

Table No. 4 gives, for the fiscal year and to date, the construction cost of irrigation works, other cost reimbursable with construction, less the construction revenues, contributed funds, nonreimbursable and abandoned costs, showing as a result the balance to be repaid by the project water users. Table No. 5 is a statement of contracts which are of book record to secure repayment of costs. Table No. 10 is a statement of the amounts due (including contributed fund) under repayment contracts, amounts collected and uncollected.

OPERATION AND MAINTENANCE RESULTS

Tables 6 and 7 are statements of the operation and maintenance results for the calendar year and to December 31, 1923. Tables 8 and 9 are similar statements for the fiscal year and to June 30, 1924. As the operation and maintenance year corresponds to the calendar year, the results as shown by Tables 6 and 7 are the better results of the operation and maintenance of the projects, while the results

shown by Tables 8 and 9 include costs for the first 6 months of the calendar year which are not offset by earnings. Operation and maintenance returns for the entire year are accrued at the end of the operation and maintenance year. Table No. 11 is a statement showing the status of the operation and maintenance charges due, collected and uncollected.

MISCELLANEOUS ACCOUNTS

Tables 12, 13, 14, and 15 are statements showing the status of various miscellaneous amounts due in connection with miscellaneous operations such as rentals of irrigation water, power and lights, rentals of grazing and farming lands, etc.

A summarization of Tables 10 to 15 is as follows:

	Due to June 30, 1924	Collected to June 30, 1924, cash and other credits	Uncollected June 30, 1924
Construction charges.....	\$21, 145, 422. 79	\$17, 720, 000. 30	\$3, 425, 422. 49
Operation and maintenance charges.....	15, 619, 055. 30	13, 117, 405. 60	2, 501, 649. 70
Rentals irrigating water.....	7, 521, 829. 82	7, 311, 056. 67	210, 773. 15
Rentals power and light.....	2, 833, 743. 42	2, 801, 342. 18	32, 401. 24
Rentals grazing and farming lands.....	825, 376. 74	806, 512. 24	18, 864. 50
Uncollected operation and maintenance penalties.....			1, 950. 25
Uncollected miscellaneous charges.....			167, 740. 66
Total uncollected.....			6, 358, 801. 99

Table 16 is an investment statement showing the expenditures, collections, and net investment for the year and as of June 30, 1924. The net investment for a project represents the expenditures made on behalf of the project less the amount actually returned by the project. The net investment of the United States in reclamation fund projects as of June 30, 1924, is \$141,102,796.09. The amounts in the column "Expenditures" represent disbursements from increase of compensation, etc., as well as from the reclamation fund. The statement at the bottom analyzes the total by funds.

The total collections creditable to the reclamation fund for the year were \$5,743,835.71 and to date \$52,238,213.41. A comparison of collections during the past few fiscal years is as follows:

1918.....	\$3, 459, 446. 00
1919.....	3, 862, 224. 67
1920.....	4, 911, 882. 83
1921.....	4, 191, 884. 13
1922.....	4, 294, 507. 34
1923.....	5, 143, 928. 22
1924.....	5, 743, 835. 71

Table 17 is a statement of net investments for operations other than in connection with reclamation fund projects.

Table 18 shows the status of congressional appropriations or authorizations for the fiscal year 1924. This table indicates that the expenditures and liabilities for each project came within the amounts authorized by Congress.

Following these consolidated tables in the Appendix are tables giving financial data for individual projects, primary and secondary.

DISCUSSION OF PROJECTS

PRIMARY PROJECTS

ARIZONA, SALT RIVER PROJECT

The land irrigated under the Salt River project is located in Maricopa County, Ariz. Including the Tempe lands, there are 5,500 farms and 12 towns, the total population being 85,000. Averaged over a period of 35 years, the annual rainfall is 8.34 inches and the range in temperature for the period from 22° to 117° F. The soil is sandy loam and silt, and cultivation is carried on throughout the entire year. Farming is highly diversified, but the major crops are cotton, alfalfa, grain, citrus, and deciduous fruits, cantaloupes, vegetables, etc. Local, coast, and eastern markets absorb surplus production.

The water supply of the project consists of the stored water of the Salt River and the uncontrolled flow of the Verde River, supplemented by reserve pumping capacity from underground water within the project. Roosevelt Dam, located on the Salt River just below the mouth of the Tonto, lies within Gila County and stores 1,635,000 acre-feet of water at the level of the top of the Taintor gates in the spillways. Water is discharged into the river channel and diverted into the main canals supplying the areas on the north and south sides by Granite Reef Dam, 30 miles east of Phoenix and about 4 miles below the mouth of the Verde River. Joint Head Dam on the Salt River, about 6 miles east of Phoenix, diverts water to north side canals, which reaches the river by seepage or otherwise below Granite Reef. Including one plant acquired with the Tempe lands and two others purchased, the project now has 12 pumping plants, originally installed for additional water supply, having a combined capacity of 110.4 second-feet, or around 9 second-feet each. In addition, 87 pumping plants with capacities ranging from less than 1 to 11.5 second-feet and an aggregate maximum capacity of 300 second-feet, installed as part of the project drainage system, are to a greater or less degree available as a supplemental source of water for irrigation if needed. The use of surplus pumped water for the development of additional land is encouraged as far as possible. With the exception of 6,000 acres irrigated by pumping from the Western Canal through a 40-foot lift to the Highline Canal, all project lands are irrigated by gravity. The canals and laterals, including the Tempe system and Maricopa Garden Farms ditches, aggregate 937.9 miles in length. The project is also operating 30 additional miles of ditch not part of the project, taken over with the New State and Utah lands. There are 180.62 miles of waste ditches, 15.85 miles of open drain (including the Tempe area), and 5.3 miles of closed drains. Drainage of the project lands at one time presented a serious problem, 30 per cent of the irrigable area being threatened with water logging in 1918. This condition is being successfully controlled with pumps, the aggregate capacity of the 99 plants (including irrigation pumps) being 410.4 second-feet. The project has five power plants, one at Roosevelt, having a capacity of 11,750 k. v. a., and four plants located on the canal system of the valley with an aggregate capacity of 8,910 k. v. a., making a total for the system of 20,660 k. v. a.

ACTIVITIES DURING FISCAL YEAR

The past year was notable in project development. An area of 23,000 acres of land under the Tempe canal was admitted to the project, bringing with it one of the oldest water rights in the valley. Land under the Utah Canal, 2,300 acres, was admitted on a temporary basis, and a contract approved by the Secretary of the Interior for the admission of 9,600 acres of additional land within the reservoir district, when a water supply shall become available by

the completion of Mormon Flat Development No. 1. New State, St. Johns, and Maricopa Garden Farms lands, aggregating 4,000 acres, were being served with pumped water, increasing by 38,900 acres the total area to be served by the project.

Mormon Flat Development No. 1, for which the water users' association sold \$1,800,000 in bonds last year, and consisting of the addition of 270,000 acre-feet to the capacity of Roosevelt Reservoir by the installation of 15-foot Taintor gates in the spillways, the construction of a new transformer house, and the installation of an additional generating unit of 10,000 horsepower capacity at Roosevelt, with the building of a dam 230 feet above lowest foundation, creating a 92,000 acre-foot regulating reservoir at Mormon Flat, 30 miles below Roosevelt, was 90 per cent complete and will be in operation by the end of the summer.

The board of governors and council of the association approved the construction of a 300-foot dam and 40,000 horsepower plant at Horse Mesa, midway between Roosevelt and Mormon Flat, and the shareholders voted on the issuance of bonds for this project on July 29. The total cost of the Horse Mesa development is estimated at \$4,400,000. The market for surplus power was assured in advance by contract covering the entire output for 25 years. The new South Consolidated power plant was completed during the year and was in operation with double the output of the old plant. Water was supplied to the Consolidated Canal through this power plant with a drop of 40 feet from the enlarged Eastern Canal. Four miles of the Consolidated above the new power plant, a considerable part of which, adjacent to the Salt River, was constantly menaced by floods, may now be abandoned.

The waste ditch program, providing surface drainage at the low corner of each quarter section of the project was 80 per cent complete. During the past year 25.62 miles of new waste ditches were constructed; 51 miles of canals and laterals were taken over with the Tempe, 16 with the Utah, 14 with the New State, and 7 with the Maricopa Garden Farms lands; 7.85 miles of new laterals were constructed, making a total of 95.85 miles to be added to the distribution system operated by the project; 11 miles of open drains were taken over with the Tempe project.

The effectiveness of drainage of water-logged land by pumping has been thoroughly demonstrated. During the year 28 new pumping plants were undertaken, 16 of which are located in the Tempe area. Nine were in operation and drilling had been completed on the remainder. A ditch was virtually completed from the end of the Tempe drain to the Gila River, 10.79 miles. With the early completion of this and with the remainder of the pumping plants mentioned, the drainage problem of the project will be virtually under control.

Operation and settlement data, Salt River project

Item	1920-21	1921-22	1922-23	1923-24
Acreage for which works were prepared to supply water	213,000	213,168	213,170	213,170
Acreage irrigated	205,060	203,346.50	204,590.50	204,590
Miles of canals operated	852.75	863.35	863.35	967.9
Water diverted (acre-feet)	¹ 1,371,983	1,231,031	² 1,215,035	² 1,075,150
Water delivered to land (acre-feet)	594,615	534,526.07	566,715	590,613
Acre-feet per acre for area under cultivation	2.90	³ 2.635	³ 2.770	³ 2.89
Total number of farms on project (when completed) ⁴	4,700	5,000	5,000	5,500
Number of farms reported ⁴	4,200	5,000	5,000	5,500
Operated by owners or managers ⁴				4,600
Operated by tenants ⁴				900
Population ⁵	31,600	33,600	36,000	36,000
Number of towns	14	14	14	12
Population	39,795	42,500	44,000	51,000
Total population of towns and farms	71,395	76,100	80,000	87,000
Number of public schools	57	60	60	63
Number of churches	62	65	65	65
Number of banks	20	20	20	15
Total capital stock	\$1,752,500	\$1,755,500	\$1,755,500	\$1,600,000
Amount of deposits	\$24,426,057	\$17,776,336	\$21,331,600	\$25,000,000
Number of depositors	35,000	38,000	39,500	40,000

¹ Includes 307,455 acre-feet wasted; water for Salt River Valley Water Users' system only; outside water deducted.

² Net Salt River Valley Water Users' Association, inclusive of 185,000 acre-feet flood water diverted for power.

³ Amount of water per acre actually charged for; 20 per cent less than the amount of water delivered to the land.

⁴ Estimated.

⁵ Includes population within town-site areas.

ARIZONA-CALIFORNIA, YUMA PROJECT

The Yuma project, exclusive of the Mesa division, comprises 65,000 acres of irrigable land for a distance of 38 miles from the boundary between Arizona and Mexico, in Yuma County, Ariz., and Imperial County, Calif. The water supply is diverted from the Colorado River at Laguna Dam 13 miles northeast of Yuma on the California side, and is carried under the river at Yuma by an inverted siphon. The limit of area of farm units is 40 acres. The duty of water averages 3 acre-feet at the farm. The soils are rich alluvium bottom land. The principal crops are cotton and alfalfa. The irrigation season is 365 days. The average temperatures for 29 years are: High, 115°; low, 28° F.; rainfall, 40-year average, 3.1 inches.

The Mesa division comprises about 45,000 acres of mesa land lying about 80 feet above the valley. The soil is sandy and the climate frostless and well adapted to the growing of citrus and other semitropical fruits. Water is to be supplied by pumping. The first unit of 6,300 acres is now being developed.

ACTIVITIES DURING FISCAL YEAR

Construction work consisted of the extension of the drainage system; 3.5 miles of open drains were dug, involving the moving of 73,800 cubic yards of earth. Extensive repairs were made to Laguna Dam. The necessity for this was due to the Colorado River shortening its channel between the dam and Yuma in 1920. This work consisted in placing 33,700 cubic yards of rock and 480 cubic yards of paving on the lower toe of the dam; 1,460 cubic yards of concrete, made into blocks of 2 cubic yards each, were placed as riprap below the sluiceways; the excavation amounted to 25,800 cubic yards.

The lateral system was cleaned by 4 to 6 Ruth ditch cleaners; 293.6 miles of canals and laterals were cleaned, involving the moving of 435,300 cubic yards of silt. From 1 to 3 draglines cleaned silt and sand from the drainage system; 19.5 miles of drains were gone over, which required the moving of 103,000 cubic yards.

The year was very successful for the water users. Better yields of nearly all of the main farm commodities were obtained and good prices were paid for most of the crops grown. During the crop year 1923 better farming methods were practiced and the results obtained were so much more satisfactory that the season of 1924 opened with a greater effort being made to obtain a better seed bed, all of which is leading to a much better class of farming with very encouraging results. Much more interest has been taken by the farmers in supporting their marketing organization. Because of the higher prices for cotton, the movement for the diversification of crops and the development of dairying made slow progress. Growing winter lettuce has been tried for the last two years with rather indifferent results. Some good results were obtained in growing watermelons for market.

The citrus plantings of 1923 on the Mesa division made excellent progress. New plantings in the spring of 1924 of 125 acres were not so large as desired, but the character of the development has been such that it is laying a good foundation for a healthy development later. Some new settlers have come into the project, but as a rule these have replaced the less successful farmers. There has been very little subdividing of the larger holdings. This matter, however, is to be pushed during the coming year and all interests are cooperating in that movement.

Operation and settlement data, Yuma project

Item	1919	1920	1921	1922	1923 ¹
Area for which bureau was prepared to supply water.....	70,000	65,000	65,000	67,200	² 71,000
Acreage irrigated.....	53,284	54,550	52,400	53,970	³ 53,925
Miles of canal operated.....	323.2	323.2	323.2	345	370.26
Water diverted (acre-feet) ⁴	478,185	468,900	482,000	546,634	672,867
Water delivered to land (acre-feet).....	155,417	160,330	140,900	140,056	154,271
Acre-feet to acre for area under cultivation.....	2.9	2.94	2.69	2.59	2.90
Total number of farms on project (when completed).....	5,190	5,750	5,750	5,750	5,750
Number of irrigated farms.....	1,225	1,230	1,211	⁵ 1,216	1,207
Operated by owners and managers.....	723	711	825	762	675
Operated by tenants.....	502	519	386	536	532
Population.....	5,000	5,100	4,800	4,200	3,800
Number of towns.....	6	6	5	5	5
Population.....	7,600	7,110	6,665	6,700	5,730
Total population of towns and farms.....	12,600	12,210	11,465	10,900	9,530
Number of public schools.....	18	⁶ 15	16	16	16
Number of churches.....	11	23	7 23	7 24	7 24
Number of banks.....	6	6	5	5	5
Total capital stock.....	\$255,000	\$255,000	\$230,000	\$280,000	\$280,000
Amount of deposits.....	\$1,923,287	\$2,100,000	\$1,927,000	\$3,095,800	\$3,378,330
Number of depositors.....	5,288	9,175	5,900	6,382	6,970

¹ Includes Yuma mesa lands.

² Project proper, 63,163 acres under public notice; 57,500 acres covered by crop census.

³ Project proper, 53,270 acres.

⁴ Of the water diverted, from 100,000 to nearly 200,000 acre-feet each year are wasted, of which the largest part flows into the Colorado River at the California spillway near Yuma, and this water can be diverted for irrigation farther down the river.

⁵ A few farms operated partly by owners and partly by tenants.

⁶ Reduction due to consolidation.

⁷ Religious organizations; figures prior to 1920 relate to church buildings only.

CALIFORNIA, ORLAND PROJECT

The Orland project is located in Glenn and Tehama Counties, with reservoir in Colusa County. Stony Creek, the source of the water supply, has a drainage area of 735 square miles above the project diversion dams; the mean seasonal run-off near Fruto is 438,500 acre-feet.

The average elevation above sea level is 250 feet; the mean seasonal rainfall, 17.8 inches; and the temperature range, 21° to 114° F. The soil is sandy and gravelly loam, silt loam, and clay loam. The principal products are alfalfa, milo, citrus, and other fruits, nuts, and vegetables. The limit of area of farm units is 40 acres, except that original subscribers are qualified to hold up to 160 acres.

The irrigation plan provides for storage at East Park Reservoir on Little Stony Creek with a feed canal 7 miles long connecting the reservoir with Stony Creek. For the irrigation of project lands located in the vicinity of Orland water is diverted from Stony Creek by two diversion weirs into the South and North Canals, which serve 14,600 and 6,100 acres of land, respectively. Stored water from the reservoir is conveyed in the natural channel of Stony Creek to the project diversions. The distribution system consists of 2,000 structures and 146 miles of canals and laterals, 90 miles of which are concrete lined. The plan also includes a high-line canal, from which power may be developed for pumping.

ACTIVITIES DURING THE FISCAL YEAR

The principal construction work consisted of the virtual completion of placing lining under supplemental construction to the extent of funds available from revenues originating from the supplemental charge of \$11 per acre. Expenditures, amounting to approximately \$30,000, were utilized in placing 72,771 square yards of lining on 10.3 miles of laterals.

Although the rainfall was somewhat less than normal, the project system was able to deliver slightly over 3 acre-feet per acre to the land under irrigation notwithstanding the fact that the late natural flow of Stony Creek was not as sustained as usual, which necessitated draft on storage about 30 days earlier than expected.

Settlement on the project, as reflected in the area irrigated and cropped and the irrigable acreage of farms irrigated, was quite satisfactory, these items being larger in amount than for any previous year. The irrigable area of 16,898 acres contained in the farms under irrigation during 1923 comprised 84 per cent of the total irrigable acreage of the project and represented a substantial increase of 466 acres over the previous year. The difference between the irrigated and cropped areas for 1923 was less than for the two preceding years, indicating that more of the land which was levelled and irrigated was being brought into a producing state. Considering the general depression prevalent in the agricultural industry throughout the country as a whole, satisfactory increases during the year were evident in population, number of farms irrigated, crop values, and land investment.

Orchard crops are assuming an increasing percentage of the total value of the crops produced on the project, there being a notable increase in both yield and value for almonds and prunes during the year. Dairying operations continued on a large and profitable scale. The value of the project dairy herds for 1923 exceeded that for any previous year of the project's history.

Operation and settlement data, Orland project

Item	1919	1920	1921	1922	1923
Acreage for which bureau was prepared to supply water.....	¹ 20,533	¹ 20,533	² 20,657	³ 20,665	³ 20,670
Acreage irrigated.....	15,203	13,872	14,697	15,119	15,500
Miles of canal operated.....	138	138	146	146	146
Water stored (acre-feet).....	51,000	62,000	13,680	63,460	36,250
Water diverted (acre-feet).....	72,000	33,800	68,867	76,632	73,191
Water delivered to land (acre-feet).....	45,000	20,600	44,200	50,589	47,363
Per acre of land irrigated (acre-feet).....	2.95	1.49	3.01	3.34	3.06
Total number of farms on project.....	846	908	936	968	988
Population.....	2,250	2,200	2,250	2,275	2,300
Number of irrigated farms.....	602	644	663	693	703
Operated by owners or managers.....	549	592	589	568	569
Operated by tenants.....	53	52	74	125	134
Population.....	1,768	1,844	1,892	1,909	1,945
Number of towns.....	1	1	1	1	1
Population.....	1,700	1,700	1,700	1,700	1,700
Total population.....	3,950	3,900	3,950	3,975	4,000
Number of public schools.....	10	10	10	10	10
Number of churches.....	7	7	7	7	7
Number of banks.....	2	2	2	2	2
Total capital stock.....	\$141,000	\$171,000	\$171,000	\$171,000	\$171,000
Amount of deposits.....	\$1,106,000	\$1,020,000	\$896,000	\$995,000	\$1,107,000
Number of depositors.....	3,000	2,900	2,800	2,900	3,000

¹ Includes 320 acres of vested water rights and 46 acres of town and school sites.² Includes 320 acres of vested water rights and 162 acres of school and town sites.³ Includes 320 acres of vested rights and 171 acres of school and town sites.**COLORADO, GRAND VALLEY PROJECT**

The Grand Valley project is located in Mesa County, Colo., on the main line of the Denver & Rio Grande Western Railroad. The principal project towns and estimated population are Grand Junction, 10,000; Fruita, 1,200; and Palisade, 900.

The irrigation plan provides for the diversion of water from the Colorado River by means of a dam about 8 miles northeast of Palisade, Colo., into a canal system on the north side of the river for the irrigation of 45,000 acres of land along the north boundary of the Grand Valley. When the project is completed about 35,000 acres will be supplied by gravity and 10,000 acres by electrically operated pumping plants to be located on the gravity canal. Water service is also furnished through the project system to 8,400 acres of land in the Palisade and Mesa County irrigation districts, and works are now under construction to supply the Orchard Mesa irrigation district, which includes 10,000 acres of land on the south side of the valley, known as the Orchard Mesa pumping division.

The average elevation of the irrigable area is 4,700 feet, the average annual rainfall is 8.3 inches, and the average range of temperature is from 99° to -7° F. The soils consist of red mesa, sandy loam, and adobe. The principal crops are alfalfa, sugar beets, grain, corn, fruit, potatoes, and vegetables.

The project has been completed far enough to supply 30,000 acres in the Gravity division, all lands in the Palisade and Mesa County irrigation districts, and 4,000 acres in the Orchard Mesa irrigation district. No lands have been opened under public notice, and the project is now operated on a rental basis.

ACTIVITIES DURING FISCAL YEAR

Gravity division.—The principal construction work was the digging of drains necessary to maintain the productivity of the lands under cultivation. Three dragline excavators completed 6.5 miles of open drains involving 166,348 cubic yards of excavation.

Orchard Mesa pumping division.—The work of reconstructing the irrigation system of the Orchard Mesa irrigation district and of constructing drains as provided in the contract dated February 18, 1922, was continued during the year. The principal features completed were: 4,017 linear feet of concrete flume 17 feet 3 inches wide by 8 feet deep of 800 second-feet capacity; 1,352 linear feet of covered conduit 11 feet by 11 feet 3 inches; one concrete siphon 12 feet in

diameter; two short flumes; one section of earth canal and embankment to replace a wooden flume; and the relining of the tunnel on Canal No. 1. On the drainage system 3.6 miles of open drains were completed, involving 81,854 cubic yards of excavation. At the close of the fiscal year the entire job, which involves an expenditure of \$1,000,000, was about 50 per cent complete.

Weather conditions were favorable during the season of 1923 and crop yields were generally satisfactory. Improved market conditions and higher prices resulted in a more optimistic feeling among most of the project farmers. The average crop yield for the season was \$46.25, an increase of 50 per cent over the previous year. Little progress in settlement and development was noted during the season of 1923, but in the spring of 1924 there was a good demand for lands of the better class, and a number of new settlers were brought to the project, principally through the activities of the Holly Sugar Corporation.

Operation and settlement data, Grand Valley project

Item	1919	1920	1921	1922	1923
Acreage for which bureau is prepared to supply water.....	¹ 38,400	¹ 38,400	¹ 38,400	¹ 38,400	² 48,400
Acreage irrigated.....	¹ 18,449	¹ 19,484	¹ 20,590	¹ 20,672	² 23,770
Miles of canals operated.....	175	175	175	175	175
Water diverted, acre-feet.....	¹ 133,364	¹ 142,527	¹ 145,416	¹ 166,404	² 247,267
Water delivered to land, acre-feet.....	³ 38,307	³ 36,024	³ 43,978	³ 46,290	³ 48,526
Per acre of land irrigated.....	³ 3.81	³ 3.07	³ 3.57	³ 3.74	³ 3.77
Total number of farms on project ⁴	900	825	825	825	825
Population.....	884	1,019	1,064	1,134	1,185
Number of irrigated farms.....	324	376	402	387	396
Operated by owners or managers.....	201	251	264	217	229
Operated by tenants.....	123	125	138	170	167
Population.....	884	1,019	1,064	1,134	1,185
Number of towns.....	6	6	6	6	6
Population ⁵	11,266	11,415	11,246	11,246	11,246
Total population in towns and on farms ⁵	12,150	12,434	12,310	12,380	12,431
Number of public schools ⁵	22	23	23	24	24
Number of churches ⁵	28	28	28	28	28
Number of banks ⁵	7	7	7	7	6
Total capital stock ⁵	\$432,000	\$465,000	\$465,000	\$468,700	\$452,300
Amount of deposits ⁵	\$3,743,714	\$3,259,780	\$3,621,420	\$3,520,500	\$3,237,000
Total number of depositors ⁵	10,042	10,150	10,975	8,825	9,850

¹ Includes data for Palisade and Mesa County irrigation districts.

² Includes data for Orchard Mesa, Palisade and Mesa County irrigation districts; project proper, 30,000 acres to which bureau could supply water; 12,870 acres irrigated.

³ Project lands only.

⁴ Estimated.

⁵ These items include areas adjacent to project.

COLORADO, UNCOMPAHGRE PROJECT

The Uncompahgre project is in southwestern Colorado, in Montrose and Delta Counties, on the Denver & Rio Grande Western Railroad. The project towns and population are Montrose, 4,000; Olathe, 750; and Delta, 2,700.

The irrigation plan provides for the diversion of water from the Gunnison River by means of the Gunnison Tunnel, 5.8 miles long, and the South Canal, 11.7 miles long, to supplement the flow of the Uncompahgre River for the irrigation of lands in the Uncompahgre Valley. To distribute the waters of the Uncompahgre and Gunnison Rivers thus combined, the more important private canals taking water from the Uncompahgre River have been purchased, enlarged, and extended by the Government, and in addition high-line lateral and other systems have been constructed on each side of the valley.

The irrigation season extends generally from April 1 to October 31, 214 days, in all Government canals.

The average elevation of the irrigable area is 5,500 feet above sea level; the average annual precipitation on the project for 22 years, 9.50 inches; and the average range of temperature, 10° to 95° F.

The soils of the irrigable area are red sandy gravel, adobe, and clay loams. The principal products are alfalfa, grain, sugar beets, potatoes, onions, fruits, and other vegetables.

The principal markets are Denver, Omaha, Kansas City, and the West for livestock; Denver, Missouri River points, and Texas for fruit, potatoes, and onions.

The project is completed with the exception of the acquisition of a few private laterals.

ACTIVITIES DURING FISCAL YEAR

Construction work consisted in the extension, enlargement, and installation of minor structures on private laterals taken over by the bureau to be operated as part of the project system.

Owing to the agricultural depression of the past three years no change has taken place in settlement conditions on the project during the past fiscal year. There was, however, an increase in the number of farms irrigated, which was due to the tendency to subdivide larger holdings.

The general crop return was an improvement over that of 1922 and averaged \$34.76 per acre. The yields of the principal crops were close to the average with the exception of alfalfa hay, which was 18 per cent less, and onions, which were 20 per cent more than the average.

The project has recovered to a considerable extent from the agricultural depression which resulted from the disastrous year of 1922.

The railroad furnished excellent service during 1923 and promises the same for 1924. This is a most vital feature in the development of the project and the recent service furnished has done much to encourage the farmers in the future of the project. The Potato Marketing Association functioned quite successfully during their first year's operation. Denver banking facilities are now available for financial purposes during future years.

Operation and settlement data, Uncompahgre project

Item	1919	1920	1921	1922	1923
Acreage for which bureau was prepared to supply water.....	100,000	100,000	1 97,410	97,410	97,060
Acreage irrigated.....	60,906	64,180	63,760	64,730	64,320
Miles of canal operated.....	442	448	452	467	489
Water diverted (acre-feet).....	420,176	429,820	446,225	427,706	439,452
Water delivered to land (acre-feet).....	390,770	365,853	415,599	422,398	328,877
Per acre of land irrigated (acre-feet).....	6.42	5.70	6.52	6.52	5.11
Total number of farms on project.....	2,000	2,000	2,000	2,000	2,000
Population.....	5,471	6,015	6,166	6,149	6,097
Number of irrigated farms.....	1,526	1,588	1,639	1,624	1,694
Operated by owners or managers.....	1,012	1,077	941	944	962
Operated by tenants.....	514	511	698	680	732
Population.....	5,471	6,015	6,166	6,149	6,097
Number of towns.....	3	3	3	3	3
Population.....	6,950	7,450	7,450	7,450	7,450
Total population in towns and farms.....	12,421	13,465	13,616	13,599	13,547
Number of public schools.....	27	27	27	27	26
Number of churches.....	27	27	27	27	27
Number of banks.....	8	8	8	7	6
Total capital stock.....	\$594,025	\$621,763	\$618,250	\$550,100	\$505,136
Amount of deposits.....	\$5,550,465	\$4,925,150	\$3,219,773	\$2,930,700	\$3,232,626
Number of depositors.....	11,000	11,000	11,000	11,250	11,250

¹ Decrease due to reclassification.

IDAHO, BOISE PROJECT

The Boise project is located in the counties of Ada, Boise, Canyon, and Elmore, Idaho; and Malheur, Oreg. It is served by the Oregon Short Line Railroad and branch lines; also the Idaho Traction and Caldwell Traction Co. electric lines. The length of the irrigation season is 184 days from April 5. The average elevation of the irrigable area is 2,500 feet above sea level. The rainfall at Boise for 60 years averaged 13.41 inches. The greater part of this precipitation occurs outside of the growing season. The average highest recorded temperature for 25 years is 102° F., and the average lowest temperature for the same period is 2° F. The character of the soil is clayey loam, light sandy loam, and sandy loam. The principal products are alfalfa, wheat, oats, clover, potatoes, apples, prunes, and head lettuce. The principal markets are Boise, Nampa, Caldwell, and Meridian, Idaho; Portland, Oreg., and eastern cities. The limiting area of farm units on public land is 80 acres, and on private land 160 acres.

The irrigation plan provides for storage of water in the Arrowrock Reservoir on Boise River, about 22 miles above Boise, and in the Deer Flat Reservoir near Caldwell and Nampa, Idaho; the diversion of water from Boise River by the Boise River Dam, about 8 miles above Boise; the distribution of water on the south side of the Boise River, through the Main Canal, leading from the dam to the Deer Flat Reservoir; distributing laterals heading in the Main Canal; distributing canals heading in the Deer Flat Reservoir; and distributing canal systems heading in the Boise River below the Boise River Dam; and the distribution of water on the north side of the Boise River to a small area of land east of Boise through a canal system heading in the Boise River Dam. Water is diverted from two large drains in the Pioneer irrigation district and carried through a gravity canal across the Boise River near Caldwell to supply 6,800 acres in the Notus division.

Water is also diverted from the Payette River by means of a concrete diversion dam located at Black Rock Canyon about 6 miles above Emmett, Idaho. This dam is required for the irrigation of 22,500 acres in the Emmett irrigation district, and upon the construction of a distribution system therefor will also be available for the diversion of water from the Payette River for 56,000 acres in the Black Canyon district. Power will also be developed in connection with the dam, which it is proposed to use temporarily in connection with the pumping requirements of the Gem irrigation district and eventually when these lands are placed under a gravity supply, for increasing the irrigable area in the Black Canyon district.

ACTIVITIES DURING FISCAL YEAR

On the Main South Side Canal, Arrowrock division, concrete side lining amounting to 1,000 feet was placed to protect a stretch where the canal skirts the Boise River. About 34½ miles of deep drains were completed involving the excavation of 1,667,000 cubic yards of class 1 material and the placing of 237 cubic yards of concrete with 5,046 feet of concrete pipe and 264,000 feet b. m. of lumber.

The removal of silt from canals and laterals required an expenditure of 13.7 per cent of the total cost of operation and maintenance. A Ruth ditch cleaner was used to clean 38 miles of canals and laterals. Fifty miles of canals and laterals, counting actual length excavated, were cleaned by teams.

The Black Canyon Dam on the Payette River at Black Rock Canyon, which makes possible the elimination of 16 miles of very difficult canal location for the Emmett irrigation district, was virtually completed and was placed in operation during the year. This dam which has a maximum height of 183 feet and contains approximately 80,000 cubic yards of concrete, in connection with pumping facilities also completed, furnishes water to the lands of the Emmett irrigation district, and is also available for lands which later will come under irrigation in the Black Canyon district and for the development of 12,000 horsepower required for pumping irrigation water.

Settlement is not and has never been a serious problem of the Boise project. During the last year there have been few changes affecting settlement. The number of tenant farmers has been slightly decreased. Little land has been sold. Transfers made were mostly in the interest of adjustment of loans or trades.

Crop conditions were especially good and yields were large. Alfalfa hay comprised 35 per cent of the cropped area. The yield of wheat was high and the acreage amounted to 25 per cent of the total. There was an increase in the acreage of corn which ranked third in area. A heavy yield of all fruits was harvested, but market conditions were adverse. Records indicated a general increase in livestock. Dairy cattle showed a normal increase, and there was a large increase in the number of hogs on project farms.

Operation and settlement data, Boise project, Idaho, by calendar years

Item	1919	1920	1921	1922	1923
Acreage to which bureau was prepared to furnish water.....	¹ 274, 125	¹ 274, 379	¹ 282, 831	¹ 283, 411	¹ 283, 471
Acreage irrigated.....	² 125, 000	² 131, 760	² 153, 000	^{2, 3} 155, 000	^{2, 3} 155, 500
Miles of canal operated.....	989	1, 000	1, 016	1, 056	1, 019
Water diverted (acre-feet).....	759, 084	853, 810	844, 195	748, 570	895, 705
Water delivered to land per acre of land irrigated (acre-feet).....	3. 34	3. 00	3. 67	3. 46	3. 70
Total number of farms on project.....	3, 992	4, 000	4, 085	⁴ 4, 998	5, 000
Population.....	15, 000	16, 000	16, 340	14, 700	14, 650
Number of irrigated farms.....	3, 207	3, 260	3, 300	3, 559	3, 600
Operated by owners or managers.....	2, 545	2, 417	2, 440	2, 896	2, 988
Operated by tenants.....	662	843	860	663	612
Population.....	10, 000	11, 176	11, 550	14, 236	10, 800
Number of towns.....	10	10	8	8	8
Population.....	40, 000	36, 400	36, 170	36, 170	36, 270
Total population in towns and on farms.....	55, 000	52, 400	52, 510	50, 870	50, 920
Number of public schools.....	24	24	28	28	23
Number of churches.....	54	56	56	56	58
Number of banks.....	15	17	16	16	14
Total capital stock.....	\$2, 000, 000	\$1, 850, 000	\$2, 741, 000	\$2, 741, 000	\$1, 750, 000
Amount of deposits.....	\$13, 500, 000	\$20, 600, 000	\$16, 326, 000	\$16, 707, 000	\$15, 295, 000
Number of depositors.....	⁵ 28, 000	⁵ 32, 000	⁵ 30, 000	⁵ 30, 000	⁵ 30, 000

¹ Including partial service to vested water-right land; project proper, 120,300.

² Acreage served with full water supply.

³ 112,500 covered by crop census.

⁴ All vested water-right lands excluded with the exception of 21,500 acres of the New York Canal Co.

⁵ Estimated; some banks refuse to give number of depositors.

IDAHO, KING HILL PROJECT

The King Hill project is located in the counties of Elmore, Gooding, Twin Falls, and Owyhee. The estimated population of the four project towns is as follows: Glenns Ferry, 1,100; Bliss, 175; King Hill, 175; Hammett, 75. The main line of the Oregon Short Line runs the entire length of the project. The water supply is obtained from the Malad River, which is fed by numerous large springs. The annual run-off is approximately 876,000 acre-feet. The water for the project is diverted from the Malad River at a point about a mile above its confluence with the Snake River, 300 second-feet of water being delivered to the canal system of the project by the Idaho Power Co. by means of a timber flume 4,000 feet long. The main canal is 50 miles long and crosses the Snake River twice by means of wood-stave siphons on steel bridges. About half of the irrigable area lies on each side of the Snake River. There are 16,314 acres supplied by gravity and 574 acres supplied by pumps. The average elevation above sea level is 2,750 feet. During the past 11 years the average annual rainfall was 8.59 inches, the average maximum temperature 107°, and the average minimum temperature 4° F. The soil on the project ranges from light to heavy sandy loam with some heavy clay. With an irrigation season of 193 days, the project produces principally alfalfa, alfalfa seed, potatoes, grains, fruits in favorable seasons, and stock. The project was reconstructed under contract with the King Hill irrigation district. Work was begun in February, 1918, and on June 30, 1923, all work contemplated under the contract was completed.

ACTIVITIES DURING FISCAL YEAR

At the beginning of the fiscal year 1924, this project was placed on an operation and maintenance basis, as construction had been finished and the force reduced to correspond.

The project was operated by the Bureau of Reclamation during the first part of the fiscal year under contract with the district, which expired November 1, 1923. A supplemental contract was subsequently executed, extending this work through November and December. A new contract providing for operation and maintenance along practically the same lines as the previous contract was entered into January 1, 1924, to cover operation and maintenance by the Bureau of Reclamation during the calendar year 1924, and a toll charge of 50 cents per acre was announced for 1924.

In December, 1923, the King Hill irrigation district requested the bureau to investigate seepage conditions affecting approximately 200 acres, the cost not to exceed \$200, to be repaid with operation and maintenance costs. Borings were put down and readings of ground water elevations taken, but the investigations were not completed. It will be the policy of the district to eliminate this seepage by lining portions of the canal rather than by drainage.

Operation and settlement data, King Hill project

Item	1920	1921	1922	1923
Acreage for which bureau was prepared to supply water.....	11, 340	13, 648	13, 648	16, 890
Acreage irrigated.....	4, 780	5, 900	6, 440	7, 020
Miles of canal operated.....	83. 2	83. 2	91. 3	100. 1
Water diverted (acre-feet).....	43, 660	56, 153	61, 326	91, 834
Water delivered to land (acre-feet).....	22, 420	30, 028	35, 875	41, 933
Per acre of land irrigated (acre-feet).....	4. 69	5. 08	5. 57	5. 97
Total number of farms on project.....	225	260	260	260
Population.....	424	557	599	598
Total irrigated farms.....	125	160	175	184
Operated by owners or managers.....	110	141	131	124
Operated by tenants.....	15	19	44	60
Number of towns.....	4	4	4	4
Population.....	1, 572	1, 685	2, 052	1, 525
Total population of towns and farms.....	1, 996	2, 242	2, 651	2, 123
Number of public schools.....	5	6	6	6
Number of churches.....	5	5	5	5
Number of banks.....	2	2	1	1
Total capital stock.....	\$30, 000	\$30, 000	\$20, 000	\$20, 000
Amount of deposits.....	\$418, 548	\$319, 036	\$275, 000	\$290, 000
Number of depositors.....	1, 060	824	800	1, 000

IDAHO, MINIDOKA PROJECT

The Minidoka project is located in Minidoka and Cassia Counties, Idaho; Jackson Lake Reservoir is in Lincoln County, Wyo. The Oregon Short Line is the only railroad on the project. Project towns and estimated population are: Burley, 4,000; Rupert, 2,500; Paul, 300; Declo, 150; Heyburn, 100; Acequia, 20. The source of water supply is Snake River, supplemented by storage. The irrigation season is from April 1 to October 15 (198 days); average rainfall for 19 years 12.2 inches; average of maximum and minimum temperatures for the past 19 years 99.1° and -13.2° F. The principal products are alfalfa, wheat, oats, barley, clover seed, sugar beets, and potatoes.

The project is watered by two canal systems, one on either side of Snake River. Power developed at the diversion dam is used in pumping water from the canals for irrigating high lands, and is also used for municipal and domestic purposes. Storage for the project is provided by a reservoir at Jackson Lake, Wyo., with a total capacity of 847,000 acre-feet, and by Lake Walcott, at the upper end of the project, with an available capacity of 100,000 acre-feet.

For many years the extension of the Minidoka project by pumping onto a tract of fine land north and west of the Gravity division has been contemplated. This requires large storage facilities to provide the necessary water supply. A large number of the canal systems already in service under private and district management also require stored water to protect their lands in years of drought. Investigation of the reservoir site at American Falls demonstrated that it is of sufficient capacity to care for the needs of the Government and other lands. A plan of cooperation provides that the operating companies will pay their share of the cost of constructing storage as the work progresses. Three irrigation districts have already made large payments; three other districts, one of them including five canal companies with 400,000 acres, have signed contracts. A contract has been signed with the Idaho Power Co. for the necessary portion of their conflicting rights at American Falls. Extensive improvements were completed in connection with the new town site of American Falls.

ACTIVITIES DURING FISCAL YEAR

American Falls Reservoir.—A contract was executed on July 2, 1923, by the Hillsdale irrigation district for 26,000 acre-feet of American Falls storage. This contract was approved on June 5, 1924. Another contract, dated July 3, 1923, was made with this company for the lease of 15,000 acre-feet of Jackson Lake storage water pending the completion of American Falls Reservoir. This contract was approved on June 30, 1924. The total storage subscriptions, including 520,000 acre-feet for the proposed Minidoka North Side pumping division, now amount to 1,066,000 acre-feet for 643,000 acres of land.

Contracts were entered into during the year amounting to \$266,553.60 for real estate for right-of-way purposes. Of this amount, \$171,142.17 was for city property and \$95,411.43 for rural property.

A contract was negotiated with the city of American Falls providing for the vacation of streets and alleys in the old town and for the construction of certain improvements in the new town at a cost of \$342,000. Under the terms of that contract a sewer system was completed, a water system was practically completed, streets were graded and a number of them graveled, and the work of building an extensive system of sidewalks was under way.

Lots in the new town were appraised and placed on the market and about 125 were disposed of.

Appraisals were made of all property in the town of American Falls that will be submerged, and of all rural property needed for right of way for a reservoir of 1,700,000 acre-feet capacity. An appraisal was also made of the salvage value of all buildings in American Falls that have been or will be acquired by the United States, and about 60 per cent of this salvaged property was sold.

Financial conditions showed improvement. Crop yields in 1923 were good and prices on most farm products fair. There was a marked increase in dairying, substantially stimulated by the operation of five cheese factories on the project. Two sugar factories paid out to project farmers \$1,100,000 for beets raised during the 1923 season. Despite a general water shortage, the 1924 crop prospect was good.

Operation and settlement data, Minidoka project

Item	1918	1919	1920	1921	1922	1923
Acreage for which bureau was prepared to supply water.....	121,000	121,392	121,557	121,557	121,562	121,570
Acreage irrigated.....	105,062	104,259	107,650	107,230	105,580	104,470
Miles of canal operated.....	634.37	634.60	634.60	634.60	634.60	634.60
Water diverted (acre-feet).....	745,821	626,645	734,428	703,929	712,975	706,889
Water delivered to land (acre-feet).....	390,903	349,012	383,766	¹ 99,363	¹ 107,573	¹ 112,380
Per acre of land irrigated (acre-feet) ²	3.7	3.3	3.6	¹ 2.13	¹ 2.38	¹ 2.39
Total number of farms on project.....	2,340	2,353	2,420	2,454	2,451	2,453
Population.....	8,490	9,029	9,250	8,848	8,301	7,571
Number of irrigated farms.....	2,208	2,353	2,420	2,454	2,451	2,382
Operated by owners or managers.....	1,556	1,877	1,863	1,987	1,868	1,758
Operated by tenants.....	652	476	557	467	583	624
Population.....	8,490	9,029	9,250	8,848	8,301	7,571
Number of towns.....	6	6	6	6	6	6
Population.....	6,600	8,500	9,000	8,445	8,170	7,070
Total population towns and farms.....	15,090	17,529	18,250	17,293	16,471	14,641
Number of public schools.....	21	28	26	22	22	22
Number of churches.....	25	25	29	29	29	29
Number of banks.....	8	8	10	³ 6	³ 5	³ 4
Total capital stock.....	\$240,000	\$260,000	\$345,000	³ \$190,000	³ \$180,000	³ \$210,000
Amount of deposits.....	\$2,543,343	\$3,725,691	\$3,860,744	³ \$1,140,000	³ \$1,100,000	³ \$1,250,000
Numbers of depositors.....	10,663	11,086	12,725	5,900	5,000	6,000

¹ South Side pumping division; data from Gravity division not available.² Partially estimated.³ Exclusive of banks that failed.

MONTANA, HUNTLEY PROJECT

The Huntley project is located in the south central part of Montana, Yellowstone County, and is tributary to the Northern Pacific and the Chicago, Burlington & Quincy Railroads. There are five principal towns on the project—Huntley, Worden, Ballantine, Pompeys Pillar, and Nibbe—which provide excellent commercial facilities to all parts thereof. The project is virtually completed, and water may be delivered to all lands from the present system. The irrigation plan provides for the diversion of water from the Yellowstone River at a point 2 miles west of Huntley and for a gravity supply to all project lands except 5,400 acres under the high-line canal and its extensions, which are served by two pumping plants located $1\frac{1}{4}$ miles east of Ballantine. These pumping plants elevate a maximum of 106 second-feet up a 45-foot lift into the high-line canal. The water supply for the project is ample and is derived direct from the Yellowstone River without diversion dam or storage works.

The soils consist of heavy clays and light sandy loams, lying at an average elevation of about 3,000 feet above sea level. Climatic conditions are favorable to the production of staple crops. The average annual rainfall is 12 to 13 inches.

ACTIVITIES DURING FISCAL YEAR

Agricultural conditions on June 30, 1924, were very good but not quite equal to those of 1923. The financial condition of the entrymen and landowners was greatly improved owing to the beet crop of 1923.

All supplemental construction funds were spent and the only work in progress was the routine operation and maintenance, which consisted principally in cleaning of ditches with the Ruth dredger, the upkeep of structures, replacement of deteriorated trap boxes, and repairs to tile drains.

No new commercial development has taken place on the project for several years.

Operation and settlement data, Huntley project

Item	1918	1919	1920	1921	1922	1923
Acreage for which bureau was prepared to deliver water.....	31,360	31,265	32,085	31,964	32,000	32,000
Acres irrigated.....	19,262	19,310	20,020	18,800	19,523	18,780
Miles of canal operated.....	229	229	229	229	229	229
Water diverted (acre-feet).....	47,982	92,638	79,079	79,186	72,245	72,893
Water delivered to land (acre-feet).....	20,182	31,785	24,250	26,814	18,768	20,296
Per acre of land irrigated (acre-feet).....	1.06	1.64	1.21	1.42	0.96	1.01
Total number of farms on project.....	691	691	691	691	690	1 596
Number of irrigated farms.....	561	549	603	578	590	547
Operated by owners or managers.....	359	315	320	377	387	269
Operated by tenants.....	202	234	283	201	203	278
Population.....	2,107	2,000	1,883	1,861	1,682	1,015
Number of towns.....	8	8	8	8	8	8
Population.....	599	599	664	673	673	530
Total population in towns and on farms.....	2,706	2,599	2,547	2,534	2,355	1,545
Number of public schools.....	8	8	8	8	8	8
Number of churches.....	6	6	6	7	7	9
Number of banks.....	4	4	4	4	2	2
Total capital stock.....	\$85,000	\$85,000	\$95,000	\$95,000	\$50,000	\$50,000
Amount of deposits.....	\$540,434	\$560,000	\$588,362	\$402,282	\$156,000	\$155,000
Number of depositors.....	1,400	1,400	1,711	1,475	810	800

¹ Differs from previous years because withdrawn public lands and unentered private lands are not included.

MONTANA, MILK RIVER PROJECT

The Milk River project is located on the Great Northern Railway in northeastern Montana, about 50 miles south of the Canadian boundary, and extending from the mouth of the Milk River (which is about 120 miles west of the North Dakota line) westward for about 150 miles to and beyond Chinook. The average elevation is about 2,200 feet; the soil grades from loam through finer textured loam or clay to a soil known locally as gumbo. The average annual rainfall is about 13.24 inches; the ordinary maximum summer and minimum winter temperatures are about 100° and -40° F., respectively.

The irrigation plan provides for the storage of water in the Sherburne Lakes and its diversion through a canal 28.9 miles long, heading three-fourths of a mile below the lower St. Mary Lake and discharging into the North Fork of Milk River, thence flowing through Canada for 216 miles and returning to the United States for the irrigation of lands on the Milk River from above Chinook to and below Glasgow; the storage of water in Nelson Reservoir located about 20 miles northeast of Malta; a storage reservoir known as the Chain Lakes Reservoir, between Havre and the Canadian boundary; the diversion of water from the Milk River by three dams near Chinook and Harlem into canals on each side of the river comprising the Chinook division; the diversion of water from the Milk River by a dam near Dodson into two canals, the Dodson North Canal irrigating lands near Dodson and Malta, and the Dodson South Canal conveying water to Nelson Reservoir and irrigating lands near Wagner, Malta, Bowdoin, Saco, and Hinsdale, comprising the Malta division; and the diversion of water from the Milk River by a dam near Vandalia into a canal on the south side of the river for the irrigation of lands near Tampico, Glasgow, and Nashua, comprising the Glasgow division.

ACTIVITIES DURING FISCAL YEAR

The St. Mary Canal was operated from May 5 to September 10 1923, and opened May 1, 1924; canals on the Malta and Glasgow divisions were operated from about April 15 to about October 10, 1923. The maximum water stored in Sherburne Reservoir was 47,400 acre-feet, and in Nelson Reservoir 42,000. As a matter of precaution the high water level is being increased gradually in both these reservoirs until the maximum capacity will eventually be reached. Heavy rains in June, 1923, reduced the amount of irrigation water demanded and produced floods which materially damaged

growing crops and irrigation works. A successful demonstration of sugar-beet raising was made on about 100 acres on 23 farms. The Malta irrigation district, embracing 67,710 acres between Dodson Dam and Hinsdale, was created on December 28, 1923.

About 70 families, comprising about 350 people, settled on lands in the Chinook division, mostly under the Harlem and Paradise Canals; and 16 families, aggregating about 80 people, on the Malta division in the vicinity of Malta, Wagner, and Dodson. Most of these settlers came from Idaho, as a result of a settlement campaign by the Great Northern Railway. However, the railway company confined its activities mostly to the Chinook division, and will not push the campaign on the Malta and Glasgow divisions until such time as the proposed contracts with the Malta irrigation district and the proposed Glasgow irrigation district are executed. The lands on which these settlers located are in general partly improved, and the purchase price is from \$40 to \$50 per acre, payable in about 8 annual installments with about 7 per cent interest on deferred payments.

Operation and settlement data, Milk River project

Item	1919	1920	1921	1922	1923
Acreage for which bureau is prepared to supply water:					
Malta and Glasgow divisions	58,900	68,600	¹ 66,373	66,500	¹ 64,800
Chinook division	20,440	25,300	27,727	30,000	32,500
Acreage irrigated	25,485	24,330	² 42,400	² 46,370	² 41,900
Miles of canal operated, exclusive of Chinook division	317	361	276	284	282
Water diverted (acre-feet):					
For Malta and Glasgow divisions	86,700	80,800	54,444	75,177	67,200
For Chinook division	27,200	26,900	33,335	27,655	34,000
Water delivered to land, exclusive of Chinook division (acre-feet)	21,500	10,460	6,190	6,068	6,875
Per acre of land irrigated exclusive of Chinook division (acre-feet)	0.84	0.58	0.54	0.51	0.50
Total number of farms on project ³	249	466	364	298	363
Population	⁴ 757	⁴ 867	⁴ 816	⁴ 1,057	⁴ 1,839
Number of irrigated farms	247	230	178	209	211
Operated by owners or managers	186	208	134	130	146
Operated by tenants	61	22	44	79	65
Population	750	763	484	651	506
Number of towns	11	⁴ 15	⁴ 15	⁴ 15	⁴ 15
Population	6,500	⁴ 7,796	⁴ 7,170	⁴ 7,100	⁴ 7,675
Total population on farms and towns	7,257	⁴ 8,663	⁴ 7,986	⁴ 8,157	⁴ 9,514
Number of public schools	20	⁴ 38	⁴ 38	⁴ 38	⁴ 35
Number of churches	22	⁴ 25	⁴ 25	⁴ 25	⁴ 30
Number of banks	⁴ 23	⁴ 25	⁴ 24	⁴ 23	⁴ 20
Total capital stock	⁴ \$780,000	⁴ \$765,000	⁴ \$825,000	⁴ \$843,000	⁴ \$709,500
Amount of deposits ⁵	⁴ \$5,279,730	⁴ \$4,500,000	⁴ \$3,562,000	⁴ \$4,350,000	⁴ \$3,736,600
Number of depositors ⁵	⁴ 17,600	⁴ 14,000	⁴ 12,500	⁴ 12,000	⁴ 9,900

¹ Reduction due to better data on irrigable area.

² Includes irrigated area in the Chinook division and land in the Malta and Glasgow divisions irrigated wholly or in part from flood water systems; project proper, 19,270 acres.

³ Total number of farms reported on crop census.

⁴ Includes Chinook division.

⁵ Deposits received from large area not in project.

MONTANA, SUN RIVER PROJECT

The Sun River project is located in Cascade, Chouteau, Lewis and Clark, and Teton Counties, lying to the north and west of Great Falls, Mont. It is served by lines of the Great Northern and the Chicago, Milwaukee & St. Paul Railways. The sources of water supply are Sun River and its tributaries, Deep Creek, Bowl Creek, and Basin Creek. The average elevation of the irrigable area is about 3,700 feet above sea level; the soil is loam, clay, and alluvium. The average annual rainfall is 10.9 inches; the average annual tem-

peratures are: Maximum, 96° F.; minimum, -33° F.; mean, 44° F. The length of the irrigation season is from May 1 to October 10 (163 days); the principal crops are hay, grain, vegetables, livestock, and dairy products. The principal markets are Great Falls, St. Paul, Minneapolis, Chicago, and Seattle.

The Fort Shaw division is watered by a canal system taking water from the Sun River. For the irrigation of lands north of Sun River water is diverted from the North Fork of Sun River and is carried through Pishkun, Sun River Slope, and Greenfields canals to the head of the irrigable lands in Greenfields division. The distribution system has been built for the irrigation of 40,000 acres in Parts One and Two of the Greenfields division, and for 2,300 acres in Big Coulee division.

Plans for future development provide for storage works on the upper North Fork of Sun River, enlargement of Pishkun, Sun River Slope, and Greenfields canals, and construction and extension of lateral systems. Possible future development may include the enlargement of Willow Creek Reservoir and diversion of water from North Fork of Sun River thereto, the enlargement of Pishkun Reservoir and diversion of water from Deep Creek thereto, storage works on Muddy Creek and in Benton Lake, and canal systems for the Vaughn and Benton divisions.

ACTIVITIES DURING FISCAL YEAR

Lateral extensions.—Work on the construction of structures, part 2, Greenfields division, was carried over from the previous year and the contractor finally completed the work October 9, 1923. This portion of the project comprises an area of 14,000 acres. The earthwork is completed, but the turnouts to unentered public land, covering an area of 2,000 acres, have not been built.

Drainage.—Work on part 1, Greenfields division, was continued with two electrically operated dragline excavators during the first half of the fiscal year. The completed drains have removed large quantities of water and thus far have kept the water down 6 feet or more below the ground surface for a distance of about one-half mile on either side of the drain. The situation at the end of the calendar year 1923 was such that it was the opinion that one dragline could do all the work necessary to protect the lands that were threatened with seepage and, in December, one of the draglines was transferred to the Boise project. Work was started early in April, 1924, and at the end of the fiscal year 11.2 miles of drains had been excavated, making a total for the project of 16.3 miles.

Operation and maintenance.—The season of 1923 opened favorably for the growth of crops. The first part of June was hot and dry, but, beginning with June 15, frequent rains made it unnecessary to use water from the canal system, particularly for the irrigation of grain. The precipitation for the calendar year was 15.81 inches and more than half of this fell in May, June, and July.

On the Fort Shaw division the first delivery of water was made May 20 and the season closed October 19.

On the Greenfields division water was first delivered to the irrigable lands on June 23. Repairs to the main canal made it impossible to operate the canal prior to this time. As a result of a wet season, the use of water was limited to an area of 2,624 acres, most of which was in alfalfa.

The season of 1924 opened with a heavy demand for water as there was very little rain in May. Some of the farmers were obliged to irrigate before seed would germinate, which is very unusual for the Sun River project. The demand dropped somewhat in June, but a large quantity of water was used in July.

Operation and settlement data, Fort Shaw and Greenfields divisions, Sun River project

Item	1918	1919	1920	1921	1922	1923
Acreage for which bureau was prepared to supply water	14, 978	40, 057	40, 057	40, 057	42, 465	42, 470
Acreage irrigated	7, 569	11, 496	14, 780	21, 750	20, 537	9, 090
Miles of canal operated	96	244	250	267	267	267
Water diverted (acre-feet)	30, 087	42, 863	75, 595	88, 258	64, 683	44, 709
Water delivered to land (acre-feet)	11, 193	24, 080	21, 653	30, 300	24, 200	13, 208
Per acre of land irrigated (acre-feet)	1. 48	1. 9	1. 47	1. 39	1. 17	1. 31
Total number of farms on project	239	212	500	500	500	500
Population	508	542	1, 000	1, 000	1, 000	1, 000
Number of irrigated farms	187	199	354	373	388	294
Operated by owners or managers	118	151	264	285	273	200
Operated by tenants	69	48	90	88	115	94
Population	508	542	861	949	978	817
Number of towns	8	8	8	4	4	4
Population	158	155	685	378	401	354
Total population in towns and on farms	666	697	1, 685	1, 378	1, 401	1, 354
Number of public schools	4	4	17	17	17	17
Number of churches	4	4	11	11	11	11
Number of banks	1	1	15	13	13	13
Total capital stock	\$20, 000	\$20, 000	\$110, 000	\$65, 000	\$71, 500	\$65, 000
Amount of deposits	\$98, 000	\$110, 000	\$391, 121	\$150, 000	\$158, 000	\$212, 000
Number of depositors	390.	400	1, 278	780	740	650

¹ Applies to whole project rather than to the two divisions named.

MONTANA-NORTH DAKOTA, LOWER YELLOWSTONE PROJECT

The Lower Yellowstone project is situated on the west side of the Yellowstone River in eastern Montana and western North Dakota. The source of water supply is the Yellowstone River, diversion from which into the main canal is at a point 18 miles below Glendive. Irrigation works have been constructed to deliver water to about 58,000 acres. Water is available for the entire irrigable area. The length of the irrigation season depends upon the amount of precipitation in the spring. May 1 to October 10 (163 days), is the maximum period of water deliveries. The average elevation is 1,900 feet above sea level. The average number of days between the last killing frost in the spring and the first in the fall is 129. Since 1905 the average annual rainfall has been about 14.4 inches. The average of the highest temperature is 103° F., and the average of the lowest -35° F. Some alkali and gumbo are found in scattering low tracts, but the project as a whole has a deep sandy loam soil. As the irrigable area of the project is a long and narrow tract with cross drainage creeks at intervals of 3 to 6 miles, drainage construction will not be expensive. The duty of water is about 1.5 acre-feet per acre. The principal crops are alfalfa, grain, sugar beets, potatoes, and corn. Billings, Mont., is the market for sugar beets; Duluth and Minneapolis, Minn., for grain; Chicago and the South for potatoes. Forage crops are consumed locally.

ACTIVITIES DURING FISCAL YEAR

Construction work consisted of minor lateral extensions, both earth-work and structures, and some additional concrete checks in the main canal. The total expenditure for construction was about \$12,000. The construction work required to deliver water to all project land was virtually completed.

Good progress was made on the removal of silt from the main canal, where it is estimated that about 250,000 cubic yards have accumulated in the first 10 miles. The canal has been in operation since 1909, and during much of this time small quantities of water have been used, which resulted in low velocities and greatly increased silt deposits. During the year about 115,000 cubic yards of silt were removed with drag lines, at a cost of 15 cents per cubic yard. One Ruth ditch cleaner was operated continuously during the summer months on laterals, and is keeping the system in satisfactory condition. About 30,000 cubic yards have been removed, at a cost of 9 cents per cubic yard.

Extensive repairs were made to the Lower Yellowstone Dam by the addition of 2,000 cubic yards of heavy rock riprap in the river bed just below the dam. Canal banks and structures were repaired and worn-out wooden structures replaced, mainly with concrete, as required to keep the system in good condition.

Operation and settlement data, Lower Yellowstone project

Item	1919 ¹	1920 ²	1921 ²	1922 ²	1923
Acreage for which bureau was prepared to supply water.....	42,167	³ 40,200	³ 40,344	³ 40,200	³ 58,000
Acreage irrigated.....	21,300	19,120	19,980	15,599	17,850
Miles of canal operated.....	188	187	174	213	268
Water diverted (acre-feet).....	70,029	47,375	64,972	49,280	89,290
Water delivered to land (acre-feet).....	26,252	16,633	25,733	18,411	22,459
Per acre of land irrigated (acre-feet).....	1.23	0.87	1.28	1.17	1.26
Total number of farms on project.....	514	543	572	575	686
Population.....	1,284	1,368	1,390	1,591	1,265
Number of irrigated farms.....	405	375	370	370	373
Irrigated farms operated by owners and managers.....	286	265	223	236	231
Irrigated farms operated by tenants.....	119	110	147	134	142
Number of towns.....	8	8	8	8	8
Population.....	3,900	2,850	2,805	2,805	2,415
Total population in towns and on farms.....	5,184	⁴ 4,218	4,195	4,396	3,680
Number of public schools.....	⁵ 12	⁵ 12	⁵ 12	13	13
Number of churches.....	13	15	15	15	15
Number of banks.....	10	10	9	7	4
Total capital stock.....	\$330,000	\$330,000	\$335,000	\$200,000	\$100,000
Amount of deposits.....	\$2,365,000	\$2,331,000	\$1,851,000	\$1,425,000	\$308,645
Number of depositors.....	7,600	6,500	4,726	4,475	1,850

¹ Project on rental basis.

² Project operated under contracts with irrigation districts.

³ District lands only.

⁴ Part of decrease due to exact census.

⁵ Decrease in number of schools due to consolidation.

NEBRASKA-WYOMING, NORTH PLATTE PROJECT

The North Platte project is situated in western Nebraska and eastern Wyoming. The source of water supply is the North Platte River. The irrigation plan provides for storage of flood waters of the river in Pathfinder Reservoir, located about 50 miles southwest of Casper, Wyo., and in smaller reservoirs along the canal lines; and diversion from the North Platte River by a dam near Whalen, Wyo., into the Interstate Canal, supplying water for lands on the north side of the river, and into the Fort Laramie Canal watering lands on the south side. A dam to be constructed near Guernsey, Wyo., will provide additional storage from a regulating reservoir and develop power. The Northport division on the north side in the vicinity of Northport, Nebr., is watered from an extension of the Tri-State Canal.

Three irrigation districts have been formed. The Northport irrigation district includes all of the Northport division. The Gering and Fort Laramie irrigation district covers all of the Fort Laramie division in Nebraska and the Goshen irrigation district covers all of the Fort Laramie division in Wyoming. The limit of area of farm units on all divisions is 80 acres for public and 160 acres for private land.

The railroads serving the project cities and towns, which have an estimated population of 18,900, are the Chicago, Burlington & Quincy, and Union Pacific. The character of the soil varies from sandy loam on the major portion of the Interstate and Northport divisions to gumbo soil on portions of the Fort Laramie division. The principal products are alfalfa, cereals, corn, sugar beets, and potatoes; and the principal markets are Omaha, Nebr., Kansas City and St. Joseph, Mo., Denver, Colo., and central Wyoming. The length of the irrigating season is from April 1 to September 30, and the average rainfall amounts to 14.82 inches. The average temperature ranges between 99° maximum and -21° F. minimum.

ACTIVITIES DURING FISCAL YEAR

Storage.—On account of the unusually heavy rainfall on the project, the requirement for storage water from the Pathfinder Reservoir was unusually small, and at the end of the irrigation season the storage was 647,100 acre-feet. The maximum inflow, 15,920 second-feet, occurred on April 17, 1924, which is the earliest date on record for maximum inflow.

Interstate division.—Work was continued on the enlargement and strengthening of the Interstate Canal and the replacement of structures in the third lateral district under supplemental construction. The total yardage moved in the enlargement of the canal was 795,073 cubic yards. At the end of the fiscal year, all the replacement work to be done under supplemental construction was completed or under contract.

Several drainage channels were enlarged and extended, virtually completing such of that work as appears practicable.

The total precipitation for the year was 21.71 inches as compared with an average annual precipitation of 14.82 inches. For this reason, the demand for irrigation water was less than any year for several years, and it was necessary to deliver water on the rotation basis for only 10 days for lands under the Interstate Canal, six days for lands under the High Line Canal, and no rotation was necessary under the Low Line Canal.

Fort Laramie division.—The excavation of the Fort Laramie Canal was completed on November 27, 1923. The canal is 130 miles long and required the excavation of 11,362,617 cubic yards of material. Of this amount, 7,621,570 cubic yards were excavated by contract at a field cost of 17 cents per cubic yard and 3,741,047 cubic yards were excavated by Government forces at a total field cost of $9\frac{9}{10}$ cents per cubic yard. The principal canal structures completed during the year were the Kiowa Creek, Owl Creek, and Stiver Canyon Siphons, and the Browns Canyon crossing. Good progress was made by the contractor in the construction of Tunnel No. 3 on the Fort Laramie Canal. The excavation was completed on April 8, 1924. In addition to the operation of six draglines, construction of structures on the canal and lateral systems was carried on from two large Government construction camps. Practically all earthwork and the hauling of all gravel and other materials used in construction were contracted. A large percentage of the work on concrete structures on the lateral system was also done by contract. At the end of the fiscal year, all the earthwork excavation, virtually all of the hauling, and a large percentage of the concrete work necessary for the completion of the division were either completed or under contract. Construction work necessary for an additional 18,000 acres of land had been completed at the beginning of the irrigation season of 1924, and at the end of the fiscal year the work was virtually completed for an additional 7,000 acres.

The construction of the Gering Drain under a cooperative contract with the Gering irrigation district was completed and the drain was extended to provide an outlet for waste and seepage waters from the portion of the Fort Laramie division in the Gering Valley. One electric dragline was operated continuously on the construction of the Kiowa and Dry Creek Drains in the vicinity of Lyman, Nebr., and an additional electric dragline was moved to that work upon the

completion of the canal excavation. One P. & H. No. 208 dragline was employed continuously on the excavation of drainage ditches in Wyoming.

During the season of 1923, the Fort Laramie Canal was operated to Horse Creek at mile 67.5. At the beginning of the season of 1924, water was delivered through an additional 40 miles of the same canal to the Stiver Canyon Siphon and to approximately 18,000 acres of land in addition to that irrigated during the season of 1923. The canal was operated for the first 25 miles to furnish water for the Lingle power plant.

Northport division.—No construction work was in progress on this division. Water was available for all of the land on the division and only routine operation and maintenance work was necessary.

Operation and settlement data, Interstate division, North Platte project

Item	1919	1920	1921	¹ 1922	¹ 1923
Acreage for which bureau was prepared to supply water.....	² 129, 715	² 129, 629	² 129, 666	113, 436	113, 490
Acreage irrigated.....	² 99, 418	² 97, 640	² 97, 400	87, 300	87, 404
Miles of canal operated.....	805	807	809	805	802
Water delivered to land (acre-feet).....	³ 201, 505	³ 175, 153	³ 186, 328	222, 509	155, 600
Per acre of land irrigated (acre-feet).....	³ 2. 27	³ 1. 99	³ 2. 14	2. 55	1. 78
Total number of farms on project ⁴	1, 420	1, 410	1, 450	1, 458	1, 458
Population.....	4, 500	5, 000	5, 700	5, 300	5, 300
Number of irrigated farms.....	1, 310	1, 300	1, 340	1, 340	1, 307
Operated by owners or managers.....	860	800	710	720	669
Operated by tenants.....	450	500	630	620	638
Population.....	4, 056	4, 746	5, 200	4, 782	4, 543
Number of towns.....	8	9	9	9	6
Population.....	11, 610	14, 382	14, 400	14, 400	12, 700
Total population of towns and farms.....	16, 110	19, 382	20, 100	19, 700	18, 000
Number of public schools.....	40	40	40	40	50
Number of churches.....	25	26	26	26	37
Number of banks.....	21	21	27	12	13
Total capital stock.....	\$462, 000	\$777, 500	\$787, 500	\$475, 000	\$505, 000
Amount of deposits.....	\$3, 100, 000	\$7, 371, 100	\$6, 834, 400	\$3, 957, 700	\$4, 533, 000
Number of depositors.....	7, 500	12, 000	11, 200	11, 650	13, 300

¹ All data exclusive of North Platte Canal & Colonization Co. lands.

² Includes North Platte Canal & Colonization Co. lands.

³ Exclusive of lands under North Platte Canal & Colonization Co. tract.

⁴ Statistics for items below, for years previous to 1922, include some figures for Fort Laramie and Northport divisions.

Operation and settlement data, Fort Laramie division, North Platte project

Item	1921	1922	1923
Acreage for which bureau was prepared to supply water.....	16, 232	44, 091	55, 500
Acreage irrigated.....	12, 150	20, 302	32, 441
Miles of canal operated.....	138	311	402
Water delivered to the land (acre-feet).....	22, 665	43, 689	45, 808
Per acre of land irrigated (acre-feet).....	1. 85	2. 15	1. 41
Total number of farms on project ¹	407	573	717
Population.....	1, 500	1, 086	1, 700
Number of irrigated farms.....	190	320	564
Operated by owners or managers.....	105	244	259
Operated by tenants.....	85	76	305
Population.....	433	650	1, 411
Number of towns.....	3	11	10
Population.....	2, 900	5, 000	4, 800
Total population of towns and farms.....	4, 400	6, 086	6, 500
Number of public schools.....	10	20	38
Number of churches.....	1	16	18
Number of banks.....	² 8	12	7
Total capital stock.....	³ \$185, 000	\$285, 000	\$165, 000
Amount of deposits.....	⁴ \$1, 039, 600	\$1, 794, 900	\$1, 413, 000
Number of depositors.....	5, 500	3, 600	4, 150

¹ Data for items below for years previous to 1923 estimated.

² Lands on the Interstate and Fort Laramie divisions are tributary to 6 of the banks listed above.

³ \$155,000 of this amount is listed under similar caption on Interstate division.

⁴ \$919,600 of this amount is listed under similar caption on Interstate division.

Operation and settlement data, Northport division, North Platte project

Item	1922	1923
Acreage for which bureau was prepared to supply water.....	4,712	16,350
Acreage irrigated.....	3,645	8,955
Miles of canal operated.....		100
Water delivered to the land (acre-feet).....	11,722	16,821
Per acre of land irrigated (acre-feet).....	3.02	1.88
Total number of farms on project.....	232	233
Population.....	800	406
Number of irrigated farms.....	50	148
Operated by owners or managers.....	19	70
Operated by tenants.....	31	78
Population.....	250	225
Number of towns.....	2	2
Population.....	1,400	1,400
Total population of towns and farms.....	2,220	1,806
Number of public schools.....	7	6
Number of churches.....	5	5
Number of banks.....	2	2
Total capital stock.....	\$50,000	\$50,000
Amount of deposits.....	\$827,000	\$843,600
Number of depositors.....	2,000	2,480

NEVADA, NEWLANDS PROJECT.

The Newlands project is located on the Southern Pacific Railroad in Churchill, Storey, Lyon, and Washoe Counties, Nev. The water supply is from the Truckee and Carson Rivers. The average annual precipitation on the irrigable area, which is at an elevation of about 4,000 feet above sea level, is 4.94 inches. The principal crops are alfalfa, grain, potatoes, melons, and dairy products. Farm units range in size from 40 to 160 acres.

ACTIVITIES DURING FISCAL YEAR

The distribution system was extended 2.75 miles by the reconstruction of a portion of the "D" Lateral and construction of the Payne, Harden, and Shane Laterals, all in the Carson division. This work involved 6,110 cubic yards of excavation. Work was continued on the installation of the new 78-inch steel power penstock, 1,128 feet in length from Lahontan Reservoir to the power plant, which was commenced during March, 1923, in accordance with the contract executed March 3, 1923, with the Canyon Power Co. On April 23, 1924, the Lahontan power plant was placed under operation from the new penstock. Reconstruction of about one-half of the Lahontan Dam spillway pool wall and the lower floor of the left spillway was necessary. Considerable back filling, replacing rock paving, and installing the 60-inch balanced needle valve and valve house remained to be done at the end of the year.

In connection with the proposed Spanish Springs Reservoir near Reno, Nev., for the storage of Truckee River water, an appraisal board made a report on August 17, 1923, covering right of way necessary for the feeder and outlet canals, following the completion of their report on the reservoir site dated April 30, 1923. Estimates of cost, areas to be irrigated, water supply, etc., for this new reservoir were prepared in the Denver and Fallon offices. Construction of deep open drains under the contract dated January 22, 1921, with the Truckee-Carson irrigation district was virtually completed during December, 1923, and was finished before the end of the fiscal year. Final report covering this work which was commenced during August, 1921, was made under date of February 10, 1924.

This contract work involved the excavation of 150.33 miles of drains with the moving of 5,472,751 cubic yards of material and the placing of 1,034 timber structures. A report, dated February 14, 1924, was made on additional work necessary to protect lands under water-right contracts. Cleaning and deepening of about 8.8 miles of old drains were done as operation and maintenance.

Operation and maintenance.—The Lahontan power plant was operated under lease by the Canyon Power Co. without a shutdown. Water deliveries for the 1924 irrigation season commenced during the last week of March. Precipitation on the watershed during the winter was about 25 per cent of normal and the lowest on record. The water supply was ample during the season of 1923 in both the Truckee and Carson Rivers, but the supply for irrigation under the Truckee Canal dropped below the requirements about May 20, 1924, and with practically no flood run-off in these rivers during the spring of 1924, it was necessary to adopt strict economy measures to distribute equitably the available supply. In order to relieve the water shortage in the Truckee division the installation of a pumping plant to pump water from Lahontan Reservoir into the Truckee Canal was commenced on April 23, 1924, and was put in operation on June 23. This plant consists of two 20-inch motor-driven centrifugal pumps to operate under a maximum head of 65 feet. During June, 1924, representatives of the bureau and the Governor of Nevada were negotiating with the owners of riparian property at Lake Tahoe in an effort to secure additional water from the lake by pumping.

Operation and settlement data, Newlands project

Item	1919	1920	1921	1922	1923
Acreage for which bureau was prepared to supply water.....	65,809	69,310	72,166	73,747	73,730
Acreage irrigated.....	44,324	45,610	46,160	44,963	44,890
Miles of canal operated.....	365	389	393	410	411
Water diverted (acre-feet).....	317,424	295,225	314,241	499,508	367,929
Water delivered to land (acre-feet).....	134,015	129,814	132,788	141,972	145,653
Per acre of land irrigated (acre-feet).....	3.02	2.85	2.87	3.15	3.24
Total number of farms on project.....	675	785	870	906	1,912
Population.....	2,386	2,523	2,652	2,450	1,2,737
Number of irrigated farms.....	694	742	788	778	1,788
Operated by owners or managers.....	619	677	708	681	1,681
Operated by tenants.....	75	65	80	97	1,107
Population.....	2,386	2,523	2,652	2,450	1,2,737
Number of towns.....	5	5	5	5	1,5
Population.....	2,240	2,830	2,500	2,500	1,2,500
Total population, towns, and on farms.....	4,626	5,353	5,152	4,950	5,237
Number of public schools.....	11	12	11	11	11
Number of churches.....	7	8	8	8	8
Number of banks.....	2	2	1	1	1
Capital stock.....	\$150,000	\$115,000	\$75,000	\$75,000	\$75,000
Amount of deposits.....	\$790,000	\$864,360	\$677,104	\$680,700	\$800,000
Number of depositors.....	1,860	2,500	2,000	1,700	1,600

¹ Data as of Dec. 31, 1923⁴⁶.

NEW MEXICO, CARLSBAD PROJECT

The Carlsbad project is located in Eddy County, N. Mex., on the Santa Fe Railway system. Project cities and towns are Carlsbad, population 3,000; and Otis, Loving, and Malaga, with a combined population of 440. The source of water supply is Pecos River. The length of the irrigation season is 260 days, which includes two weeks in winter. The average elevation of the irrigable area

is 3,100 feet. The rainfall averages 14.2 inches. The average of recorded temperatures for a period of 23 years ranges from 112° to -7° F. The soil of the irrigable area is Pecos clay and sandy loam, with high lime content. The principal products are cotton, alfalfa, and miscellaneous grains and fruits. The principal markets are Carlsbad, Kansas City, Chicago, New Orleans, and Galveston. The irrigation plan provides for the storage of water in Lake McMillan and in Avalon Reservoir, both controlled by earth and rock-fill dams. Water is diverted at Avalon Reservoir into a canal system, which extends 25 miles in a southerly direction.

ACTIVITIES DURING FISCAL YEAR

The storage reservoir did not fill during the winter of 1923-24, and storage became exhausted from July 7 to 11 and from July 20 to August 20. During these periods of no storage the flow of the river was very low. Only minor damage was done to the cotton crop as a whole, but there were a few cases of major individual damage. The yield of the third crop of alfalfa was decreased materially, which was in a measure compensated for by a heavy alfalfa seed yield. Farming operations were generally profitable, prices of both cotton and alfalfa being exceptionally good. The spring of 1924 was late and unfavorable, but crops were in good condition at the close of the fiscal year. The storage reservoir filled during the winter and a good early summer run-off from melting snows left considerable surplus water at the close of June.

A few families, principally from Arkansas, purchased farms averaging about 80 acres each. The necessity for reducing large holdings on the project is still urgent and there seems to be a general desire on the part of owners of excess land to reduce the size of farms; prices appear to be fair in most cases. The percentage of tenantry is higher than for previous years, but closer supervision of farm property rented by owners to tenants is apparent in better-kept farms.

Operation and settlement data, Carlsbad project

Item	1919	1920	1921	1922	1923
Acreage for which bureau was prepared to supply water.....	25,000	25,000	25,000	25,000	25,000
Acreage irrigated.....	20,363	22,170	23,810	24,076	24,060
Miles of canal operated.....	45	45	45	45	45
Water diverted (acre-feet).....	114,050	131,673	137,500	116,700	120,260
Water delivered to land (acre-feet).....	48,933	53,644	59,371	56,687	57,256
Per acre of land irrigated (acre-feet).....	2.4	2.42	2.49	2.36	2.38
Total number of farms on project.....	1,741	1,770	1,769	1,796	1,808
Population.....	1,378	1,575	1,435	1,580	2,128
Number of irrigated farms.....	565	363	426	333	388
Operated by owners or managers.....	² 298	² 189	² 277	² 184	188
Operated by tenants.....	267	³ 267	149	149	200
Population.....	1,378	1,575	1,435	1,580	2,128
Number of towns.....	4	4	4	4	4
Population.....	3,375	3,375	3,375	3,440	3,440
Total population in towns and on farms.....	4,753	4,950	4,810	5,020	5,568
Number of public schools.....	7	13	13	10	12
Number of churches.....	8	11	11	12	12
Number of banks.....	3	5	3	3	1
Total capital stock.....	\$275,000	\$275,000	\$225,000	\$225,000	\$25,000
Amount of deposits.....	\$1,271,645	\$1,049,924	\$1,176,441	\$1,106,300	\$100,000
Number of depositors.....	2,611	2,617	2,350	2,374	⁴ 300

¹ Water-right applications; 388 farms irrigated and cropped, 1923.

² Many farms were operated by one man.

³ Several tenants on one farm, also operated in part by owner.

⁴ Two bank failures January 2 and May 10, 1924.

NEW MEXICO-TEXAS, RIO GRANDE PROJECT

The Rio Grande project is international and interstate, including approximately 83,000 acres of land in the Elephant Butte irrigation district of New Mexico, 67,000 acres in the El Paso County water improvement district No. 1 of Texas, and approximately 25,000 acres in the Republic of Mexico. The population of the principal city, El Paso, Tex., and suburbs is 95,000, and the project lands and towns have an additional population of 26,000.

Flood waters of the Rio Grande are stored in the Elephant Butte Reservoir. With an average rainfall of 10 inches, the use of water for irrigation in addition is approximately 3 acre-feet per acre. The irrigation season normally is from February 1 to October 15. Virtually all the lands are in private ownership. All lands in the United States are in irrigation districts, and contracts for repayment of construction charges and yearly operation and maintenance cost have been executed between these districts and the United States.

The project is divided into four divisions, namely, the Rincon, Leasburg, Mesilla, and El Paso. Each is furnished a water supply by diversion from the Rio Grande. The last-named division utilizes an international diversion dam located near El Paso, and this structure, maintained jointly by the irrigators of both countries, also diverts the water into the main canal for the Mexican lands.

Construction of the storage feature is virtually completed. On June 30, 1924, it was estimated that the distribution system, consisting of the construction of main diversions and reconstruction and extension of the old community ditches as the lateral system, was 86 per cent complete. The drainage system, when completed, will consist of 350 miles of deep, open drain, involving the excavation of 17,000,000 cubic yards, of which on June 30, 1924, 326 miles had been constructed.

Power development at Elephant Butte Dam consists of a small plant required for the operation of the water system and furnishing of lights. At the time of the construction of the dam six power gates and penstocks were incorporated in the structure, and it is estimated that a power plant with an output of 18,000 kilowatts could be constructed at some future date.

ACTIVITIES DURING FISCAL YEAR

With the completion of the Tornillo intake from the Rio Grande near Fabens, which is the last diversion point for the project, main diversion features have been completed, and construction activities continued throughout the year about equally divided between distribution and drainage systems.

Work in the Rincon division to provide additional drains and canals progressed with the employment of additional excavator equipment released from lower valley work.

The successful crop yield created a new impetus to land cultivation and settlement, and during the winter of 1923 and 1924 a large number of new settlers came to the project and increased the demands for further canal and drainage construction. The increase in area over previous years to be farmed is approximately 15,000 acres, and fortunately funds and equipment were available to provide the necessary drainage and irrigation facilities to these new areas.

Drainage.—The results obtained in lowering the underground water and leaching alkali deposits are very successful and gratifying; 130,000 acres are now protected by constructed drains and the system has been built within the estimated cost.

Operation and settlement data, Rio Grande project

Item	1918	1919	1920	1921	1922	1923
Acreage for which bureau was prepared to supply water	92,300	107,000	169,000	109,000	116,000	124,000
Acreage irrigated	64,781	¹ 70,000	¹ 73,346	² 85,580	³ 89,589	⁴ 92,220
Miles canal and drain operated	153	385	546	586	645	808
Water diverted (acre-feet)	⁵ 613,638	⁶ 603,711	⁶ 677,953	⁶ 782,366	⁶ 998,728	⁶ 1,036,419
Water delivered to land (acre-feet)	⁷ 348,295	⁷ 174,945	⁷ 226,464	⁷ 197,086	204,452	188,819
Per acre of land irrigated (acre-feet)	⁸ 5.37	2.50	2.95	2.55	2.28	2.18
Total number of farms on project	2,287	2,703	3,021	3,204	3,534	3,743
Population	10,259	12,890	12,199	11,774	11,267	15,92
Number of irrigated farms	2,287	2,703	3,021	3,222	3,534	3.74
Operated by owners or managers	1,377	1,966	2,668	2,628	2,954	3,014
Operated by tenants	910	737	353	594	580	729
Number of towns	27	27	29	29	34	42
Population	87,997	89,316	100,235	101,235	110,442	111,883
Total population in towns and on farms	98,256	102,206	⁹ 112,434	⁹ 113,009	⁹ 121,709	127,808
Number of public schools	52	54	102	103	49	73
Number of churches	82	83	105	106	110	115
Number of banks	18	17	14	13	13	9
Total amount of capital stock	\$3,000,000	\$3,250,000	\$2,990,000	\$2,950,000	\$2,950,000	\$2,675,000
Amount of deposits	\$32,000,000	\$33,000,000	\$30,898,499	\$28,194,815	\$30,000,000	\$27,323,442
Number of depositors	40,000	44,000	31,716	30,000	31,000	30,000

¹ Land irrigated by bureau distribution system only.

² Includes 1,120 acres Fort Hancock.

³ Includes 5,369 acres in Palominas and Fort Hancock, outside project limits, irrigated under surplus stored water contract.

⁴ Project proper.

⁵ Measured at point of delivery from canals.

⁶ Total diversions, including water wasted and rediverted from river below.

⁷ Includes delivery to farms by Bureau of Reclamation operation and to heads of community ditches on project.

⁸ Delivered to heads community ditches.

⁹ 5,000 soldiers included in El Paso's population.

NORTH DAKOTA, WILLISTON PROJECT

The Williston project is located in Williams County, N. Dak., on the Great Northern Railway. Williston is the principal town and the project headquarters. The Missouri River is the source of water supply. The irrigation season is 80 days but may be lengthened by the action of the board of directors of the irrigation district; the average rainfall is 13 inches; the average high temperature is 99° and the average low -37° F. The principal products are sugar beets, alfalfa, corn, potatoes, dairy cows, and hogs. Public farm units are limited to 80 acres and private to 160 acres.

A central steam power plant is located near Williston adjoining Government-owned coal lands, where electrical energy is generated for the operation of the pumping stations, of which there are four. The plan of the Williston project provides for a series of motor-driven centrifugal pumps in an intake station on the Missouri River, a settling basin receiving the water from the intake station, and a main canal of 90 second-foot capacity extending along Little Muddy Creek to the power plant, where two sets of steam-driven turbines operate centrifugal pumps for the higher lifts. From the main canal, about midway between the river and the power plant, electrically driven pumps raise water 28 feet for the lands on the west side of Little Muddy Creek.

ACTIVITIES DURING FISCAL YEAR

A permanent land pumping station was constructed at an estimated cost of \$30,000. This station replaced the pumping barge, which was unsafe for further use after 16 years' service. The new station will save approximately \$1,200 per year in cost of launching and docking the barge and removal and placement of ways, and, with the installation of a smaller third pumping unit, is estimated to save an additional \$1,500 in consumption of electrical energy.

Operations were continued under the commercial power contract with the city of Williston. Notwithstanding a general depression in

business, the installation of additional small motors and appliances in the city made the requirements virtually the same as those of the fiscal year 1923.

The project operates its own coal mine and produces fuel from adjoining public lands to supply the power plant; 13,400 tons of coal were mined at a cost of \$1.94 per ton. This cost is 45 cents lower than the previous year. A recent investigation showed the costs to be about 40 cents per ton lower than the average for the mines of North Dakota and the conditions of the mine among the best. The irrigation district has urged that permission be granted to sell coal to farmers for the purpose of increasing the production and correspondingly reducing the unit cost.

Several farm homes were built on small tracts and every farm with improvements suitable for living quarters was occupied. Seventy-five additional persons were on the project for sugar-beet work, and a number of small houses were provided for them.

Operation and settlement data, Williston project

Item	1919	1920	1921	1922	1923
Area for which bureau was prepared to supply water.....	8, 189	7, 653	7, 653	7, 653	7, 650
Acreage irrigated.....	2, 446	2, 810	2, 080	1, 583	1, 170
Miles of canal operated.....	31	31	35	35	35
Water diverted (acre-feet).....	4, 028	4, 000	2, 383	1, 942	1, 423
Water delivered to land (acre-feet).....	2, 633	2, 684	1, 624	1, 352	887
Water per acre of land irrigated (acre-feet).....	1. 08	0. 97	0. 78	0. 85	0. 76
Total number of farms on project.....	105	105	105	105	144
Population.....	200	200	210	220	1 241
Number of irrigated farms.....		94	76	73	63
Operated by owners or managers.....	33	47	39	40	35
Operated by tenants.....	24	19	12	9	13
Operated by nonresidents.....		28	25	24	15
Population.....	181	194	200	212	224
Number of towns.....	2	2	2	2	2
Population.....	5, 400	5, 000	5, 000	4, 500	4, 500
Total population of towns and farms.....	5, 600	5, 200	5, 210	4, 720	4, 741
Number of public schools.....	6	6	6	6	6
Number of churches.....	6	6	7	7	7
Number of banks.....	4	3	3	2	1
Total capital stock.....	\$260, 000	\$260, 000	\$260, 000	\$185, 000	\$100, 000
Amount of deposits.....	\$1, 756, 000	\$2, 000, 000	\$1, 800, 000	\$1, 700, 000	\$1, 500, 000
Number of depositors.....	3, 600	5, 010	3, 600	3, 500	3, 000

¹ Does not include hired help or beet workers.

OREGON, UMATILLA PROJECT

The Umatilla project is located in Umatilla and Morrow Counties and is traversed by the main line of the Oregon-Washington Railroad & Navigation Co. and the Columbia River Highway. The project towns are Hermiston, Umatilla, Irrigon, Boardman, and Stanfield.

The source of water supply is the Umatilla River, which has a drainage area covering 2,160 square miles. The mean annual run-off is 520,000 acre-feet.

The average elevation of the irrigable area is 470 feet above sea level, the average rainfall is 8.62 inches for 15 years and the length of the irrigation season will approximate 210 days. The principal products are alfalfa, fruits, vegetables, honey, and dairy products.

The irrigation plan of the East division provides for the diversion of water from the Umatilla River above Echo, Oreg., through a feed canal 24.5 miles in length to the Cold Springs Reservoir which has a storage capacity of 50,000 acre-feet, whence it is delivered directly to the land through a system of canals and laterals. Water is also diverted from the Umatilla River near the mouth of Butter Creek by the Maxwell Canal and when available supplements the discharge from the reservoir.

For the West division water is diverted from the Umatilla River about half way between Hermiston and Umatilla and is delivered directly to lands bordering the Columbia River in the vicinity of Umatilla, Irrigon, and Boardman.

The McKay Reservoir is under construction on McKay Creek about 6 miles south of Pendleton, Oreg. When completed this reservoir will have a storage

capacity of 75,000 acre-feet and form a supplemental water supply for 30,000 acres of land in the Stanfield and Westland irrigation districts in the South division of the project.

ACTIVITIES DURING THE FISCAL YEAR

East division.—The principal construction work in progress was the continuation of the improvement of the A Canal.

In connection with betterments to the irrigation system as provided in the contract with the Hermiston irrigation district, the R Canal was lined and portions relocated.

Work was also commenced on the drainage betterments as provided for in the contract with the Hermiston irrigation district, and resulted in the excavation of 29,070 cubic yards of class 1, wet; 33,510 cubic yards of class 1, dry; 580 cubic yards of class 3, wet; 51 cubic yards class 3, dry; and 160 cubic yards of class 3, tunnel materials; and the construction of 14 minor concrete structures and 4 minor timber structures.

The construction of lateral extensions was continued, about 3.6 miles of lateral being built; 4,665 linear feet of 20-inch, 8,101 linear feet of 16-inch, and 2,862 linear feet of 12-inch concrete pipe were laid; and 2,952 linear feet of laterals were lined.

West division.—Number Four spillway, a wooden structure, was replaced by a concrete structure; 2,990 linear feet of 18-inch pipe were laid.

South division.—On June 30 the right-of-way for McKay Reservoir had all been purchased, the diversion and outlet tunnel excavated and lined, the preparation of the foundation under the dam well advanced, and excavation of rock from the spillway channel about one-half completed.

Placing of gravel in the dam embankment was proceeding at the rate of about 90,000 cubic yards per month; 263,000 cubic yards, or about 12 per cent of the required embankment, had been placed to the end of the fiscal year, at a cost well within the estimate.

Winter feeding of lambs proved a good investment, and dairying and poultry suffered least fluctuation. Little was realized from the fruit crop. Interest was manifest in small diversified crops, but lack of capital prevented much expansion.

Operation and settlement data, Umatilla project

Item	1919	1920	1921	1922	1923
Area for which bureau was prepared to supply water	24,300	24,395	24,400	24,592	24,470
Miles of canal operated	177	177	177	186	188
Acreage irrigated	10,533	12,030	13,150	13,273	13,330
Water diverted (acre-feet)	162,850	165,534	130,872	129,187	127,504
Water delivered to land (acre-feet)	53,500	50,651	57,492	59,313	62,142
Per acre of land irrigated (acre-feet)	5.10	4.21	4.37	4.47	4.63
Total number of farms on project	875	1,000	1,000	1,000	1,011
Population	1,200	1,472	1,562	1,613	1,491
Number of irrigated farms	500	528	544	558	540
Operated by owners or managers	350	450	442	435	418
Operated by tenants	150	78	102	123	122
Population	1,200	1,280	1,562	1,613	1,491
Number of towns	4	4	4	4	4
Population	1,200	1,280	1,280	1,280	1,280
Total population of towns and farms	2,400	2,752	2,842	2,893	2,771
Number of public schools	6	6	6	6	6
Number of churches	9	9	9	9	9
Number of banks	1	1	1	1	1
Total capital stock	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000
Amount of deposits	\$232,000	\$217,590	\$235,367	\$300,000	\$300,000
Number of depositors	1,129	1,200	1,200	1,200	1,200

OREGON-CALIFORNIA, KLAMATH PROJECT

The Klamath project is located in southern Oregon and northern California. The project is served by the Southern Pacific and the Oregon, California Eastern Railroads; Klamath Falls with a population of about 5,500 is the principal project city, is the center of an extensive lumber industry, and as a shipping point ranks second in the State.

The average elevation of the irrigable lands is about 4,100 feet above sea level. The principal agricultural products are alfalfa and grain; stock raising is practiced to a large extent; the dairying industry, begun several years ago, is increasing rapidly. The principal markets are Portland, Oreg., Sacramento and San Francisco, Calif. The irrigation season usually begins about May 1, and ends on September 30.

The project derives its water supply principally from Upper Klamath Lake which is situated just north of Klamath Falls. Water for irrigation is diverted into the Main Canal at the lower end of the lake; a short distance below the point of diversion the Main Canal passes under the city of Klamath Falls by means of a concrete-lined tunnel, 3,300 feet in length.

An important feature of the project is the reclamation of the bed of Tule Lake which has no visible outlet. The lands are first uncovered by the prevention of inflow and by evaporation; then the necessary irrigation works constructed. The principal works designed to prevent inflow are Clear Lake and Gerber Reservoirs and the Lost River Diversion Canal. Clear Lake is located on the headwaters of Lost River and is in effect an evaporating basin covering an area of about 25,000 acres; surplus storage is available for the irrigation of about 12,000 acres. The diversion canal connects Lost River with Klamath River and diverts to Klamath River water entering Lost River below Clear Lake Dam.

About 20,000 acres in Langell Valley and 10,000 acres near Bonanza will be watered from Clear Lake Reservoir, Gerber Reservoir, and springs tributary to Lost River.

ACTIVITIES DURING FISCAL YEAR

Storage system.—The contractor for the construction of Gerber Dam started a small crew on March 4 and on June 30 had completed about 85 per cent of the excavation for the foundation. He expected to begin placing concrete in July and to finish the job before winter.

Tule Lake division.—The canal and lateral system has been completed for an area of 10,000 acres, which was opened to entry in October, 1922. Work was in progress on the drainage and lateral systems for the lands farther south, excavation for which was being done by Government forces. The total excavation for the year amounted to about 700,000 cubic yards. The structures will be mostly of timber and will be built under contract.

Langell Valley division.—On the west side of the valley the work on the irrigation system was virtually completed on June 30, and water was turned into the West Canal early in May. The Dry Lake pumping plant was completed early in June. Most of the irrigable lands have been dry-farmed for years; this year most of the farmers under the West Canal irrigated their lands; otherwise there would have been virtually no returns.

On the east side of Langell Valley, contracts have been let for the diversion dam on Miller Creek and for the excavation for the lateral system. Most of the North Canal will be constructed by dragline excavator operated by Government forces.

Operation and settlement data, Klamath project

Item	1919	1920	1921	1922	1923
Acreage for which bureau was prepared to supply water.....	50,000	50,000	51,000	51,000	¹ 54,171
Acreage irrigated.....	42,881	44,800	44,883	44,929	² 47,400
Miles of canal operated.....	225	225	225	225	277
Water diverted (acre-feet).....	119,850	114,179	106,104	119,830	124,137
Water delivered (acre-feet).....	56,490	49,754	48,713	49,862	56,619
Per acre of land (acre-feet).....	1.32	1.11	1.11	1.11	1.21
Total number of farms on project.....	570	570	570	570	600
Population.....	2,000	2,050	2,200	2,200	2,600
Number of irrigated farms.....	540	542	542	542	580
Operated by owners or managers.....	350	352	430	430	450
Operated by tenants.....	190	190	112	112	130
Population.....	1,600	1,650	1,720	1,720	1,800
Number of towns.....	5	5	5	5	5
Population.....	5,300	5,500	5,800	6,200	7,000
Total population, towns and farms.....	7,300	7,550	8,000	8,400	9,600
Number of public schools.....	21	21	22	22	24
Number of churches.....	10	10	10	10	11
Number of banks.....	5	6	5	5	5
Total capital stock.....	\$500,000	\$595,000	\$545,000	\$255,000	\$350,000
Amount of deposits.....	\$4,000,000	\$4,500,000	\$3,500,000	\$3,500,000	\$4,200,000
Number of depositors.....	6,500	9,250	8,000	8,000	8,200

¹ Project proper, 45,300 acres.² Includes 9,700 acres of Van Brimmer lands and in miscellaneous pumping districts.**SOUTH DAKOTA, BELLE FOURCHE PROJECT**

The Belle Fourche project is located in western South Dakota, a little north and east of the Black Hills. The district is served by the Chicago & North Western Railway, which runs into the heart of the project, and the Burlington Railway, which runs into the Black Hills. The principal towns are Belle Fourche, Newell, Nisland, and Fruitdale. The source of water supply is the Belle Fourche River. The climate is semiarid, with an average annual rainfall of about 14 inches; the temperature ranges from -38° to 105° F. The character of the soils varies from light sandy loam to heavy clay, the clay soils predominating. The duty of water averages 1.5 acre feet per acre. The principal products are alfalfa, wheat, oats, corn, potatoes, sugar beets, garden truck, and livestock, the chief markets for which are Omaha, Minneapolis, and Chicago.

The irrigation plan provides for the diversion of water from the Belle Fourche River by means of a dam about $1\frac{1}{2}$ miles below Belle Fourche, S. Dak., and an inlet or supply canal about $6\frac{1}{2}$ miles in length into a storage reservoir, controlled by the Belle Fourche Dam on Owl Creek, a tributary of the Belle Fourche River; the distribution of water from the inlet canal to a small area of land; and the distribution of water from the reservoir through two canal systems on both sides of the Belle Fourche River.

ACTIVITIES DURING FISCAL YEAR

The bureau was prepared to deliver water to 81,900 acres in 1923, but owing to a very wet season, only 30,550 acres were actually irrigated. Irrigation began on May 14, and reached a peak on July 25, after which date there was little demand for water because of the continued heavy rains. The excessive rainfall was detrimental to some of the project crops, particularly alfalfa, which deteriorated after harvesting so that less than 50 per cent of the crop was of grade suitable for baling and shipping.

Replacement and repair of decayed wooden structures continued during the year with some important concrete construction on the distribution system. Three Ruth dredgers gave satisfactory and economical results in removing silt and vegetable growths from laterals.

The general unsatisfactory agricultural condition and trend of population into other industries kept land values at bargain prices, and new settlers were slow to take up project opportunities where

many were anxious to let go. Good farms were being rented on terms which brought the owner much less than his assessments for water and taxes. The transfer of inactive tracts into the hands of real dirt farmers would relieve much of the financial distress of those who are attempting to cover too much ground. Some of the project industries were getting on their feet, and the success of farmers who remain should eventually attract more settlers.

Operation and settlement data, Belle Fourche project

Item	1919	1920	1921	1922	1923
Acreage for which bureau is prepared to supply water.....	82, 634	82, 430	83, 328	82, 190	81, 900
Acreage irrigated.....	56, 638	59, 850	55, 100	31, 150	30, 550
Miles of canal operated.....	615	615	615	615	506
Water diverted (acre-feet) from Belle Fourche River.....	121, 293	101, 113	86, 791	115, 629	99, 176
Water delivered to farms (acre-feet).....	82, 409	36, 616	71, 715	28, 421	22, 290
Per acre of land irrigated (acre-feet).....	1. 46	0. 61	1. 3	1. 09	0. 73
Total number of farms on project.....	1, 292	1, 292	1, 292	1, 292	1, 292
Population.....	2, 675	2, 700	2, 700	2, 700	2, 500
Number of irrigated farms.....	1, 000	1, 024	1, 033	¹ 1, 035	² 1, 035
Operated by owners or managers.....	668	692	451	833	772
Operated by tenants.....	332	332	582	116	188
Population.....	2, 597	2, 650	2, 510	2, 213	2, 035
Number of towns.....	5	5	5	5	5
Population.....	2, 200	2, 350	2, 386	2, 386	2, 350
Total population in towns and on farms.....	4, 875	5, 050	5, 086	5, 086	4, 850
Number of public schools.....	24	26	24	24	25
Number of churches.....	11	9	9	9	9
Number of banks.....	9	9	9	9	6
Total capital stock.....		\$250, 000	\$250, 000	\$250, 000	\$150, 000
Amount of deposits.....	\$3, 337, 680	\$2, 657, 621	\$2, 373, 380	\$2, 606, 200	\$2, 145, 000
Number of depositors.....		6, 560		6, 500	³ 5, 000

¹ 86 farms not operated.

² 75 farms not operated.

³ Estimated.

UTAH, STRAWBERRY VALLEY PROJECT

The Strawberry Valley project is located in the north central part of Utah; the irrigable area lies along the southeastern shore of Utah Lake, in Utah County, and the storage works, in Wasatch County, 30 miles east of Springville. The irrigation plan provides for the storage of water in Strawberry Reservoir, the carriage of these stored waters through Strawberry Tunnel, approximately 4 miles long, into Diamond Fork, a tributary of the Spanish Fork River, and the diversion of water from this stream through canal systems to the irrigable area.

The length of the irrigation season is 169 days, from April 15 to September 30. The average elevation of the project lands is about 4,600 feet above sea level. The average rainfall at Payson for a period of 16 years is 18½ inches, most of which occurs from September 1 to May 1. The climate is temperate, varying from 0° to 95° F. The last killing frost in the spring usually occurs prior to May 10, and the first in the fall after October 1. The soil varies from sandy loam to heavy clay and varying mixtures of both, with black alluvium and loam in the bottom lands. The mesa lands are sandy loam underlaid with gravel so that natural drainage is excellent. All soils are easily worked and extremely fertile if properly cultivated, and are suitable for raising any crops that will grow in the Temperate Zone. The principal crops are wheat, oats, barley, millet, alfalfa, timothy, sugar beets, potatoes, corn, cane, apples, plums, pears, peaches, prunes, apricots, cherries, melons, and all kinds of vegetables. Sugar beets, cereals, and hay constitute the staple crops.

The project is traversed by two transcontinental railroad lines, the Denver & Rio Grande Western and the Los Angeles & Salt Lake (Union Pacific System). There is also an electric interurban line connecting the main project towns with Salt Lake City and points in northern Utah.

ACTIVITIES DURING FISCAL YEAR

Operation and maintenance, irrigation system.—The principal maintenance work was the installation of new trash racks at the intake of the power canal, concrete repair work, and raising the crest of the diversion dam. Four 5 by 8 feet wooden gates were also installed at the lower end of the sand boxes for velocity control in connection with the operation of the new racks.

Precipitation for the year was far below normal, with a very dry spring. Irrigation was resorted to at an early date and delivery of water was begun during the latter part of April. Indications at the close of the year, with an abundance of water in the reservoir, pointed to a fair yield of most crops.

Operation and maintenance, power system.—The power plant and transmission lines were in continuous operation, furnishing commercial power to the several towns and communities under the project. New Woodward oil pressure governors were installed in the power plant in connection with the two 500 k. v. a. generator units.

Fifteen hundred feet of 2-inch galvanized pipe were laid, connecting the pump house with the power house and reserve tank, for supplying clear water to the turbine bearings. The plant, with these extensive repairs now complete, is in much better condition for handling the increasing load. Indications pointed to an increasing revenue from the sale of power with a reduction of operation costs.

The season of 1923 was above average in available water supply. Crop production was about normal, with the exception of sugar beets. Financial returns per acre were slightly greater than during the previous year. Project sugar factories experienced a successful season, manufacturing approximately 300,000 bags of sugar.

The livestock industry, with the exception of sheep and lambs, did not materially improve during the year. Poultry and dairy products on the other hand showed excellent returns.

Banking conditions continued to improve. Savings accounts increased and mortgage indebtedness decreased. Federal farm loans at low rates of interest are displacing local mortgages.

The principal industrial development during the year was the construction and blowing in of a 500-ton pig iron furnace and 33 by-product coke ovens by the Columbia Steel Corporation of California. This plant is located midway between Provo and Springville and was put in active operation on April 15, 1924. The successful operation of this industry will open a new and important era in the development of the intermountain region, more especially the adjacent project area.

Operation and settlement data, Strawberry Valley project

Item	1920	1921	1922	1923
Acreage for which bureau was prepared to supply water	50,000	53,889	53,889	53,890
Acreage irrigated	¹ 45,450	¹ 47,446	¹ 47,446	¹ 47,460
Miles of canal operated	9.3	9.3	9.3	9.3
Water diverted (acre-feet)	69,100	83,000	79,500	83,800
Water delivered to land (acre-feet)	57,900	71,200	73,401	79,674
Per acre of land irrigated (acre-feet)	1.27	1.50	1.55	1.68
Total number of farms on project	3,000	3,200	3,200	3,113
Population	7,000	7,000	7,000	7,000
Number of irrigated farms	2,700	2,740	2,741	2,741
Operated by owners or managers	2,200	2,340	2,291	2,291
Operated by tenants	500	400	450	450
Population	6,500	6,500	6,500	6,500
Number of towns	12	12	12	12
Population	16,000	16,000	16,000	16,000
Total population of towns and farms	23,000	23,000	23,000	23,000
Number of public schools	22	22	22	23
Number of churches	23	23	25	25
Number of banks	6	6	6	² 4
Total capital stock	\$285,000	\$285,000	\$285,000	\$210,000
Amount of deposits	\$2,180,000	\$1,750,000	\$1,900,000	³ \$1,429,354
Number of depositors	9,830	10,000	10,000	³ 7,000

¹ Project proper, 34,290 acres.² Two bank failures during the year.³ Figures do not include two banks closed during 1923.**WASHINGTON, OKANOGAN PROJECT**

The Okanogan project is located in Okanogan County, Wash., on a branch line of the Great Northern Railway running from Wenatchee to Oroville, Wash. Towns on the project are Okanogan, Omak, and Riverside. The source of water supply is Salmon Creek with storage in Conconully and Salmon Lake Reservoirs. Water is pumped from the Okanogan River by the Robinson Flat pumping plant, from Duck Lake by the Duck Lake pumping plant, and from two Government wells to supplement the flow of gravity water from the reservoirs. A pumping plant is also operated at the Salmon Lake Reservoir during dry years which pumps water from Salmon Lake below the elevation of gravity flow.

The length of the irrigation season is 153 days from May 1 to September 30. The average elevation of the project is 1,000 feet above sea level; the average rainfall is about 11.5 inches; the temperature ranges from 108° F., to -10° F. The soil is volcanic ash and gravel on the upper benches and sand and gravel on the lowlands along the Okanogan River. The principal crop of the project is apples, with some peaches, pears, small fruits, hay, and vegetables. The principal markets are the States east. The duty of water is 2½ acre-feet per annum at the farm.

ACTIVITIES DURING FISCAL YEAR

Approximately 14,500 linear feet of laterals on which excessive seepage losses occurred were lined with concrete. Installation of electric pumping machinery at two additional private wells was completed.

About 2 acre-feet of water per acre were delivered during the season of 1923, about 875 acre-feet being pumped from below the gate sill of Salmon Lake Reservoir. The snowfall during the winter of 1923-24 was light, the run-off in the spring of 1924 being much less than enough to furnish an adequate water supply. It was expected that not to exceed 8 inches of water per acre would be delivered to subscribed water-right lands during the season of 1924. In addition to the oil engine pumping at Salmon Lake, electrical pumps at Robinson Flat, Duck Lake, and the Government wells augmented the flow of gravity water from Conconully Reservoir. Five private wells were also operated to replace gravity water during the irrigation season within the fiscal year and four additional small private pumping plants during the irrigation season of 1924.

Operation and settlement data, Okanogan project

Item	1919	1920	1921	1922	1923
Acreage for which the bureau was prepared to supply water	10,099	8,200	8,200	7,676	7,600
Acreage irrigated	5,859	5,440	5,650	5,570	5,160
Miles of canal operated	79	79	79	79	79
Water diverted (acre-feet)	13,837	8,435	21,866	21,318	20,488
Water delivered to land (acre-feet)	9,967	5,259	16,706	15,295	13,634
Per acre of land irrigated (acre-feet)	1.70	0.96	2.96	2.75	2.64
Total number of farms on project	594	594	1,594	1,473	510
Population	1,147	1,150	1,220	1,363	1,430
Number of irrigated farms	407	400	439	1,447	458
Operated by owners or managers	361	350	388	1,390	399
Operated by tenants	46	50	51	57	59
Population	1,147	1,150	1,220	1,363	1,430
Number of towns	3	3	3	3	3
Population	1,520	1,885	2,150	2,300	2,600
Total population in towns and on farms	2,667	3,035	3,370	3,663	4,030
Number of public schools	7	5	6	6	7
Number of churches	8	8	8	8	8
Number of banks	5	5	5	5	5
Total capital stock	\$160,000	\$155,000	\$155,000	\$155,000	\$155,000
Amount of deposits	\$600,000	\$1,050,100	\$1,043,000	\$956,000	\$1,000,000
Number of depositors	1,800	2,100	2,200	2,250	2,350

¹ Figures corrected since last report.

WASHINGTON, YAKIMA PROJECT

The Yakima project, comprising the Sunnyside, Tieton, Kittitas, Moxee, Roza, and Kennewick divisions, is located in Kittitas, Yakima, and Benton Counties, Wash. The water supply comes from the Yakima River and its tributaries, supplemented by storage in Keechelus, Kachess, Cle Elum, Bumping, Tieton, and Clear Creek Reservoirs. Sunnyside division diverts water from the east side of the Yakima River at Union Gap for the irrigation of 107,600 acres, and Tieton division from the Tieton River, about 15 miles above its mouth, for 32,000 acres. The project plan provides for the ultimate irrigation of 70,287 acres in the Kittitas division, with diversion from the Yakima River at Easton, 58,350 acres in the Roza division diverting from the Yakima River about 10 miles above Yakima, 35,000 acres in the Kennewick division diverting from the Yakima River at Prosser, and 36,750 acres in the Moxee division with diversion from the Tieton River about 5 miles above its mouth. The Wapato Indian project, now being constructed by the United States Indian Service, diverts water from the west side of the Yakima River at Union Gap for the irrigation of 120,000 acres on the Yakima Indian Reservation.

The irrigation season on the Sunnyside division extends from April 1 to October 31 (214 days) and on the Tieton from April 20 to September 30 (164 days). The water duty on the Sunnyside division is 3 acre-feet per acre and on the Tieton division 2.4 acre-feet per acre. The soil is volcanic ash, sandy loam, and decomposed basalt. The principal products are alfalfa, apples, pears, peaches, grains, potatoes, sugar beets, hops, stock, and dairy products.

Transportation is furnished by the Northern Pacific, Union Pacific, and Chicago, Milwaukee & St. Paul Railways.

ACTIVITIES DURING FISCAL YEAR

During the fiscal year construction work was carried on continuously at Tieton Dam. The principal items of work were placing 200,000 cubic yards of rock embankment, 560,000 cubic yards of earth embankment, and 10,500 cubic yards of concrete; excavating 155,000 cubic yards of spillway and cleaning 1,175 acres of the reservoir. Virtually all the operating gates and machinery were purchased or on the job at the end of the year, and the dam was about 80 per cent completed at the close of the fiscal year.

The operating season of the Sunnyside division continued until October 20, 1923. The Granger siphon, providing water for 1,600 acres under the Granger irrigation district, was put in operation at the beginning of the 1924 irrigation season.

Water was turned into the Sunnyside canals on March 10 for the 1924 season. Heavy winds during the spring, carrying weeds into the canals, caused some operating difficulties, and the lack of the usual winter precipitation over the project left the land dry, with a resulting heavy demand for water.

Diversion of water from the Tieton River for irrigation continued from July 1 to October 7, 1923, and began on March 28, 1924, about two weeks in advance of the regular time, owing to the early spring.

Maintenance work included cleaning of silt, willows, and weeds from 335 miles of canals and laterals, the placing of approximately 140 cubic yards of concrete in turnout and diversion structures, the erection of 3,290 linear feet of wood-stave flume, and the installation of 2½ miles of pipe lines for the elimination of open ditches and small wooden flumes.

The Yakima project produced a bumper crop for the year 1923, but met with discouraging marketing conditions. The hay growers organized cooperatively as the Northwest Hay Growers Association, and it was believed that prices had been strengthened by a more orderly system of marketing.

A blight caused by the leaf hopper seriously affected the sugar-beet crop, and only one of the three beet sugar factories in the valley was operated. This has been one of the most profitable crops of the project and it is hoped that through the cooperation of the Department of Agriculture a method of combatting this pest may be discovered in the near future.

Operation and settlement data, Sunnyside division, Yakima project

Item	1919	1920	1921	1922	1923
Acreage for which bureau was prepared to supply water.....	100,130	100,733	101,509	101,339	95,180
Acreage irrigated.....	90,000	93,610	94,500	95,000	95,000
Number of farms irrigated.....	2,810	2,905	3,065	3,138	3,181
Miles of canal operated.....	605	605	605	605	605
Water diverted (acre-feet).....	421,364	417,522	440,348	421,950	432,963
Water delivered to land (acre-feet).....	295,215	284,800	309,709	301,838	313,800
Per acre of land irrigated (acre-feet).....	3.270	3.040	3.28	3.18	3.30
Total number of farms on project.....	2,810	2,905	3,065	3,138	3,181
Population.....	9,477	10,929	12,080	12,332	10,128
Number of irrigated farms on project.....	2,810	2,905	3,065	3,138	3,181
Operated by owners or managers.....	2,009	2,272	2,322	2,375	2,157
Operated by tenants.....	801	633	743	763	1,024
Population.....	9,477	10,929	12,080	12,332	10,128
Number of towns.....	13	13	11	11	11
Population.....	7,650	6,941	6,941	7,250	7,250
Total population of towns and on farms.....	17,127	17,870	19,021	19,582	17,378
Number of public schools.....	37	40	41	41	41
Number of churches.....	30	30	30	30	30
Number of banks.....	13	13	13	12	12
Total capital stock.....	\$400,000	\$380,000	\$397,000	\$360,000	\$360,000
Total amount of deposits.....	\$4,388,610	\$2,695,848	\$2,914,608	\$2,615,415	\$2,281,606
Total number of depositors.....	11,182	11,556	11,643	10,556	9,348

Operation and settlement data, Tieton division, Yakima project

Item	1919	1920	1921	1922	1923
Acreage for which bureau was prepared to supply water	32,000	32,000	32,000	32,000	32,000
Acreage irrigated	27,000	28,000	28,500	28,700	28,350
Miles of canal operated	335	335	335	335	335
Water diverted (acre-feet)	98,223	96,506	100,844	93,754	96,541
Water served to land (acre-feet)	70,776	69,471	71,148	71,105	72,182
Per acre of land irrigated (acre-feet)	2.62	2.47	2.50	2.48	2.55
Total number of farms on project	1,480	1,480	1,480	1,480	1,480
Population	2,850	3,314	3,457	3,542	3,453
Number of irrigated farms	1,253	1,340	1,300	1,300	1,305
Operated by owners or managers	903	1,048	1,010	965	875
Operated by tenants	350	292	290	335	430
Population	2,850	3,314	3,457	3,542	3,453
Number of towns	8	8	8	8	8
Population	23,000	23,000	23,000	23,000	23,000
Total population of towns and on farms	25,850	26,314	26,457	26,542	26,453
Number of public schools	10	10	10	10	10
Number of churches	3	3	4	4	4

WYOMING, RIVERTON PROJECT

The Riverton project lies in Fremont County, Wyo., northeast of Wind River and west of the Big Horn River. Adjacent towns on the Chicago & North Western Railway are Riverton and Shoshoni with estimated populations of 2,000 and 500. The source of water supply is Wind River. The irrigation season is from May 1 to September 30. The average altitude is 5,200 feet; the average annual rainfall is about 8 inches; the average maximum temperature is about 95° F.; and the average minimum temperature -27° F. The soil is a heavy loam. The principal products are alfalfa, cereals, sugar beets, and potatoes; and the principal markets, Omaha, Denver, and local. The estimated duty of water is 2 acre-feet per acre per annum at the farm.

The flood waters of Wind River, Bull Lake Creek, and Dinwoody Creek will be stored in Pilot Butte, Bull Lake, and Dinwoody Reservoirs. The waters of Wind River will be diverted into the Wyoming Canal, serving the entire project.

ACTIVITIES DURING FISCAL YEAR

Structures on the first 10 miles of the Wyoming Canal were nearly completed.

Work was begun in December, 1923, on the intake and outlet works of the Pilot Butte Reservoir and was continued during the remainder of the year.

Work was begun in September, 1923, on the Pilot Butte hydro-electric power plant and was nearly completed. Power from this plant will be used in completing the construction of the project; 28 miles of permanent, 33,000-volt transmission line were constructed.

*Settlement data, Riverton project*¹

Item	1919	1920	1921	1922	1923
Number of towns	2	2	2	2	2
Population	2,500	2,500	2,500	2,500	2,500
Number of public schools	2	2	2	2	2
Number of churches	7	7	7	7	7
Number of banks	5	5	5	5	5
Total capital stock	\$110,000	\$135,000	\$135,000	\$135,000	\$135,000
Amount of deposits	\$1,200,000	\$1,500,000	2 \$900,000	2 \$1,000,000	2 \$1,000,000
Number of depositors	2,700	2,600	2,200	2,200	2,200

¹ Project in process of construction, no water deliveries.² Estimated.

WYOMING, SHOSHONE PROJECT

The Shoshone project is located principally in Park and Big Horn Counties, Wyo., with a small area in Carbon County, Mont., and consists of the Garland, Frannie, Willwood, and Heart Mountain divisions. Irrigation works have been constructed which provide for the delivery of water to about 68,800 acres under public notice in the Garland and Frannie divisions, and work is under way to provide for the irrigation of about 15,600 acres in the Willwood division. Water is obtained from the Shoshone River and storage is provided in the Shoshone Reservoir, created by the Shoshone Dam, located 8 miles west of Cody, Wyo., to supplement direct flow rights from the river.

The irrigation plan contemplates three diversions from the river. The first diversion, that for the proposed Heart Mountain division, will be located at the Shoshone Dam. No work has been undertaken on this feature except the surveys and a short outlet tunnel at the Shoshone Dam. The second diversion, which has been in operation since 1908, is located at the Corbett Dam on the Shoshone River, 16 miles below the Shoshone Dam, for the irrigation of lands in the Garland and Frannie divisions. The third diversion is effected by the Willwood Dam on the same stream, 8 miles below the Corbett Dam. This dam has been completed and work is well under way on the construction of canals and laterals to provide water for the lands of the Willwood division on the south side of the Shoshone River.

The annual rainfall on the project lands averages 5.5 inches and the average elevation is about 4,500 feet above sea level. Temperature record over a period of 16 years shows a mean maximum of 97.9° F. and a mean minimum of -19.7° F. The principal agricultural products on the developed part of the project are alfalfa, wheat, oats, potatoes, sugar beets, and beans. On the Garland and Frannie divisions the amount of water delivered to the farms has averaged 2.34 acre-feet per acre irrigated. Transportation facilities are provided by the Chicago, Burlington & Quincy Railroad; and the principal markets are Billings and Butte, Mont.; Casper, Wyo.; Omaha, Nebr.; and Kansas City, Mo. The principal project towns are Powell, Deaver, and Frannie, Wyo.

ACTIVITIES DURING FISCAL YEAR

Willwood division.—The Willwood Dam was completed and the construction plant dismantled during the fore part of the year. Excavation of the main canal and several large cross drains was carried on with one dragline working practically the entire year. Earthwork on the lateral system was carried on by small contractors. The construction of a large flume across C-J coulee near the upper end of the main canal was completed by Government forces and under contract. Work was also being carried on by contract on a portion of the lateral system structures.

Garland division.—Twenty-two and seven-tenths miles of open drains and 15.3 miles of closed drains were constructed during the fiscal year.

Frannie division.—Four dragline excavators were employed during 1923 and two during 1924, constructing 27.4 miles of open drains.

No new lands were opened to entry on the project during the year nor was there any activity in the settlement of lands open to entry or in the sale of town lots in the Government town sites of Frannie, Deaver, and Powell.

On the Garland division the total acreage cropped was about the same as in 1922. Crop yields were good and all produce except sugar beets sold at higher prices than have prevailed since 1920. The average crop value per cropped acre in 1923 on this division was \$27.02, an increase of 32 per cent over 1922. The 1923 value is practically the average for the last 10 years, indicating a return to somewhat nearly normal conditions.

On the Frannie division the acreage cropped decreased 15 per cent. Increased returns for produce brought the total cropped value up to within 3 per cent of the 1922 returns. The 1923 average acreage value was \$14.81, or 55 per cent of that of the Garland division. Many farms on the division were abandoned, at least temporarily, and many others were very poorly farmed.

Public notice No. 30, issued February 7, 1924, gave the water users the option of accepting a temporary suspension of the regular public notices, pending the reclassification of the irrigable area of the division. Public notice No. 32, issued April 11, 1924, provided for the delivery of water on a rental basis, payments to be made in advance but purchase to be allowed in quantities as small as 20 acre-feet. The former public notice has been accepted generally by the water users remaining on the division and has renewed their vigor in the combat of the problem of establishing productive homesteads. The advance crop report for 1924 shows 6,750 acres cropped.

Operation and settlement data, Shoshone project

Item	1919	1920	1921	1922	1923
Acreage for which bureau is prepared to furnish water	56, 119	65, 890	65, 826	71, 223	70, 350
Acreage irrigated	41, 641	45, 650	45, 420	42, 870	38, 650
Miles of canal operated	415	458	460	457	452
Water diverted (acre-feet)	199, 061	187, 329	221, 419	192, 851	176, 198
Water delivered to land (acre-feet)	117, 459	113, 065	112, 324	99, 170	91, 082
Per acre of land irrigated (acre-feet)	2. 81	2. 50	2. 47	2. 33	2. 36
Total number of farms on project	823	1, 009	1, 005	1, 083	1, 071
Population	2, 481	2, 730	2, 686	2, 444	2, 025
Number of irrigated farms	803	910	935	914	838
Operated by owners or managers	619	695	646	696	426
Operated by tenants	184	215	289	218	412
Population	2, 481	2, 730	2, 686	2, 444	2, 025
Number of towns	5	5	5	5	5
Population	1, 395	1, 345	1, 541	1, 585	1, 705
Total population of towns and farms	3, 876	4, 075	4, 227	4, 029	3, 730
Number of public schools	11	12	7	7	7
Number of churches	8	8	8	8	8
Number of banks	5	6	5	4	3
Total capital stock	\$110, 000	\$125, 000	\$110, 000	\$100, 000	\$85, 000
Amount of deposits	\$955, 000	\$644, 000	\$543, 000	\$441, 000	\$466, 000
Number of depositors	2, 500	2, 605	2, 400	2, 400	2, 300

COOPERATIVE INVESTIGATIONS AND PROPOSED PROJECT EXTENSIONS

NOTE.—A description of secondary projects and investigations carried on under cooperative contracts will be found in previous annual reports. The following discussions are limited to those projects and investigations on which work was done during the fiscal year ending June 30, 1924. Authorization for this work is provided in the acts of Congress approved January 24, 1923 (42 Stat. 1174), and February 21, 1923 (42 Stat. 1281). The cost of investigations designated (a) were paid from the appropriation for General Investigations, 1923-24, as provided in the act approved March 4, 1923 (42 Stat. 1527).

ARIZONA

BOULDER CANYON RESERVOIR INVESTIGATIONS

By the provisions of the Kincaid Act (41 Stat. 600), Congress in 1920 authorized and directed an examination and report by the Secretary of the Interior on the condition and possible irrigation development of the Imperial Valley in California. The act provided that the Secretary should report as to the feasibility of providing storage

for these lands and the effect of such storage on irrigation development elsewhere in the Colorado River Basin. The authorization and program of investigation have been continued with annual appropriations made in pursuance of that law and with funds provided through cooperative agreements with the Imperial irrigation district, the Coachella Valley County water district, the Palo Verde joint levee district, and the cities of Los Angeles and Pasadena.

During the past year office studies have been continued to define the most economical use of water for irrigation and power development, considering storage in reservoirs of varying capacities at all sites suggested as feasible and the order in which the development should proceed. These studies included those of irrigable areas, water supply, flood control, power development, and designs and estimates of dams of various heights and types at Lees Ferry, Diamond Creek, Bridge Canyon, Spencer Canyon, Devils Slide, Boulder Canyon, Black Canyon, Bulls Head, Mohave Canyon, and Parker. Tests of materials for use in construction at the dam sites in Boulder and Black Canyon were made by the Bureau of Standards and surveys were made of salt claims in the reservoir site.

The chief engineer submitted report on the problems of the Colorado River Basin to the Commissioner, Bureau of Reclamation, on February 28, 1924.

A committee of engineers consisting of Spencer Cosby, Corps of Engineers, United States Army; William Kelly, chief engineer, Federal Power Commission; F. E. Weymouth, chief engineer, Bureau of Reclamation; Herman Stabler, chief land classification branch, Geological Survey; and E. B. Debler and Walker R. Young, engineers, Bureau of Reclamation, was appointed by the Secretary of the Interior to consider the problems of the Colorado River and made report under date of March 17, 1924. The report of the committee was submitted by the Secretary of the Interior to Congress on March 17.

COLORADO RIVER DIVERSIONS

The results of these investigations, which were in progress during 1922 and 1923, are given in report of the Arizona engineering commission consisting of E. C. La Rue, of the United States Geological Survey; Porter J. Preston, of the Bureau of Reclamation; and H. E. Turner, of the State water commissioner's office.

Irrigation of large areas in Gila River Basin by diversion from the Colorado River above Needles was found infeasible. An alternative plan with diversion at Parker, covering a smaller area, was presented and recommended for further investigation.

Irrigation possibilities are also treated covering proposed projects in the Cottonwood, Mohave, Blankenship, Chemehuevis, Parker, and Cibola Valleys as well as a number of miscellaneous areas in Arizona. The work was completed and report transmitted to the Governor of Arizona and the Bureau of Reclamation on July 5 1923.

COLORADO RIVER TRIBUTARIES

This investigation which was begun during the past year was completed and report dated September, 1923, covering irrigation possibilities on the Virgin, Little Colorado, and Williams Rivers in Ari-

zona, Utah, and Nevada, was transmitted to the commissioner on October 8, 1923. Erratic water supply and excessively silt-laden streams present unfavorable conditions for further development.

CALIFORNIA

SACRAMENTO VALLEY INVESTIGATIONS

These investigations are being made under a cooperative contract dated January 26, 1924, between the United States, the department of public works, division of engineering and irrigation of the State of California, and the Sacramento Valley Development Association, providing for the continuation of cooperative investigation of the proposed Iron Canyon project and of proposed control works for preventing incursion of salt water into the delta region of the Sacramento and San Joaquin Rivers in California.

The sum of \$40,000 has been made available for the investigations, \$20,000 of which was allotted by the Secretary of the Interior from the appropriation made for miscellaneous investigations of reclamation projects pursuant to acts of Congress dated February 21 and March 4, 1923. The State department of public works and the Sacramento Development Association have each made available the sum of \$10,000.

Results of previous investigations on the Iron Canyon project are given in report of May, 1920, by H. J. Gault, engineer of the Bureau of Reclamation, and W. F. McClure, State engineer of California. The investigation under way involves consideration of the feasibility of a low line canal in place of the high line adopted in the previous report.

A field office was established at Berkeley, Calif. Preparations have been made for developing the foundation conditions at three of the possible sites for the salt water barrier and the work of preparing preliminary designs and estimates has been started.

CALIFORNIA POWER INVESTIGATIONS

A board consisting of Maj. U. S. Grant, 3d, United States Army; E. W. Kramer, hydroelectric engineer, United States Forest Service; and D. C. Henny, consulting engineer, Bureau of Reclamation, chairman, representing departments of the Federal Government, and W. F. McClure, chief of division of engineering and irrigation of California, was appointed by the Federal Power Commission to study various streams in California and make recommendations regarding the best uses to be made of the water.

Trinity River.—The first study undertaken related to the Trinity River, in northern California, a tributary of the Klamath River. The principal feature considered was the desirability of tunnel diversion to the upper Sacramento River and its effect upon irrigation and power development and on navigation at the mouth of the Trinity River. The first meeting of the board was held on July 13, 1923, and the work was completed and report made on February 18, 1924.

American River.—The study of the American River was taken up in September, 1923, and a report made to the Federal Power Commission on May 19, 1924.

North Fork Stanislaus River.—Field examination was made by the board in September, 1923. A report is in process of preparation.

COLORADO

SAN LUIS VALLEY INVESTIGATIONS

The San Luis Valley comprises considerably over a million acres of smooth, irrigable land lying in a compact body in the south central part of Colorado, near the State line. The best information available indicates that about 425,000 acres are now being irrigated. The irrigation of additional land in the valley depends on water supply available after other prior rights in the Rio Grande Basin have been satisfied. Large areas in the valley need drainage. The study of water supply for additional irrigation in the valley was taken up by the Bureau of Reclamation in 1910, and again in cooperation with the Department of Agriculture in 1912 (see fifteenth annual report).

During the year 1919, engineers of the Bureau of Reclamation made a study of the water supply and possible development of the entire Rio Grande drainage basin (see twentieth annual report). Since 1919 large areas have been drained by private enterprise.

Return flow from drains constructed has encouraged Colorado to revive the question of further development in the valley. On account of the complexity of the problem, both human and physical, the States of Colorado and New Mexico have passed laws authorizing the appointment of commissioners from each State for the purpose of effecting an agreement as to the division of the water of the stream, and the State of Texas and the Federal Government have been invited to join in the negotiations. Herbert Hoover has been selected to represent the United States, Delph Carpenter the State of Colorado, and J. O. Seth the State of New Mexico.

Upon instructions of the Secretary of the Interior, the chief engineer and field commissioner of the Bureau of Reclamation visited the San Luis Valley from October 31 to November 3, 1923, inclusive.

Further engineering investigations were advised, to determine the consumptive use of water in San Luis Valley and the amount of water which would be available for use below San Luis Valley, that would be picked up by a proposed large drain through the trough of the valley, and to make an estimate of the cost of such a drain.

Engineers are now in the field collecting data necessary in connection with various claims to water in Rio Grande Basin.

BADITO PROJECT

The Badito project includes 40,000 acres of public lands in Pueblo and Huerfano Counties, Colo., that were withdrawn from entry under the Carey Act in 1911. The project is dependent upon flood flows of the Huerfano River for its water supply, the normal discharge of the river having long ago been appropriated.

The reclamation works proposed consisted of a reservoir with a storage capacity of 34,000 acre-feet and about 20 miles of carrying canals from which numerous laterals were to distribute water to the irrigable lands.

Early in 1923, the promoters of the Carey Act project informed the department that they were unable to finance its construction and, together with officials of the State of Colorado, suggested that its development be undertaken under the terms of the reclamation act. The Carey Act segregation was canceled and the lands which it

embraced were simultaneously covered by reclamation first form withdrawal "to permit the State and Government to consider the possibility of their reclamation."

On October 2, 1923, the Secretary of the Interior ordered an investigation of the Badito project by the Bureau of Reclamation. After a field reconnaissance and a study of all available data relative to water supply and existing appropriations, a report was submitted to the Secretary on February 25, 1924, showing that water rights for direct irrigation and storage had been decreed in excess of both the normal and flood flows of the Huerfano River and that the cost of construction would be excessive.

By departmental order of March 13, 1924, the lands were released from the reclamation withdrawal and opened for disposition under the homestead and other applicable laws.

UPPER WHITE RIVER PROJECT

This project is located in Rio Blanco and Moffat Counties, the irrigable areas being located in Little Beaver Basin east of Meeker and in Axial and Dry Lake Basins south of Craig and Maybell. The irrigation plan contemplates diversion from the North Fork of the White River just below Marvine Creek, conveying the water by means of a tunnel through Yellow Jacket Pass to the Thornburgh (Pass Butte) Reservoir. This diversion canal will supply water to the Little Beaver Basin. The main canal for the Axial and Dry Lake Basins will divert from Milk Creek a few miles below the Thornburgh Reservoir, running in a general northwesterly direction and tunneling Juniper Mountain for the irrigation of the latter basin. The project is limited by water supply to about 52,000 acres. The preliminary report of June, 1924, indicates the cost of construction to be in excess of the benefits to accrue to the land, and therefore the project is considered infeasible.

IDAHO

BOISE PROJECT EXTENSION, BLACK CANYON DIVISION

The Black Canyon division, located between the Boise and Payette Rivers, includes an area of about 60,000 acres of new lands, of which 32,000 acres can be covered by gravity from the Black Canyon diversion dam, and the balance requires a pumping lift of 75 to 100 feet.

The diversion dam is practically complete and in operation in the service of the Emmett irrigation district, and half of the cost will be carried by that district. Development of electrical power for pumping on the higher lands of the Black Canyon district is planned at the diversion dam.

During the year careful, detailed surveys were made to determine the probable cost of the main canal, which is an expensive feature. Field work also included a general layout of the distribution system, pumping plants, and boundary of irrigable lands. Study of the water supply and examination of several storage sites were made. A report dated June 8, 1924, included all of the information available to date.

DUBOIS PROJECT

The work on this investigation, which was begun during the preceding fiscal year under contract with the Dubois Finance Association, was carried on during the past fiscal year with funds allotted from the appropriation for secondary investigations. A traverse on the 6,170 contour was run around the Island Park Reservoir site. A profile was run over the route of the proposed outlet tunnel under Big Bend Ridge and a trial line from the mouth of the tunnel to Medicine Lodge divide. A study of geological conditions surrounding Island Park damsite, reservoir, and outlet tunnel was made by Harold T. Stearns of the United States Geological Survey. A drilled test hole penetrated 75 feet of loose cinders directly beneath a thin layer of basaltic rock in the river bed. The general conclusion of the report was unfavorable to the watertightness of the damsite and reservoir site.

MOUNTAIN HOME PROJECT

The cooperative investigation of this proposed project under contract with the Boise Chamber of Commerce was completed, and the results of the survey are contained in report dated September 13, 1923, copies of which were transmitted to the commissioner and the contractor.

The irrigable area was found to be largely in excess of the area that could be reclaimed safely with the available water supply.

On account of the many construction difficulties to be encountered the estimated cost of the project makes its construction probably prohibitive at this time.

MONTANA

BLACKFEET WATER SUPPLY INVESTIGATION

A contract was executed under date of August 22, 1923, by the Commissioner of Indian Affairs and the Toole County irrigation district in accordance with the act of Congress approved February 26, 1923 (42 Stat. 1289). This investigation consisted of a field survey of possible diversions from streams flowing on the Blackfoot Indian Reservation and lands irrigable therefrom. A report was completed in June, 1924, giving the results of the survey and studies of water supply necessary for the irrigation of the irrigable lands on the reservation.

NEBRASKA

TRI-COUNTY PROJECT

The Tri-County project is located in the south-central part of Nebraska, in Gosper, Phelps, Kearney, and Adams Counties.

The investigations were initiated by the Central Nebraska Supplemental Water Association in securing the passage, in the Sixty-seventh Congress, of Senate Joint Resolution 215. This act authorized the Secretary of the Interior to make the investigations with funds to be provided by the association. Under deposit of \$5,000, made by the association, the field work on these investigations, which was started in November, 1922, was continued to June 1,

1923. A contract between the Bureau of Reclamation and the association, made effective August 1, 1923, provided for the allotment of \$5,000 from the general investigations fund and \$5,000 to be deposited by the association. Under this contract the work was carried to completion.

The water supply for the project as proposed will be derived from the Platte River and impounded in reservoirs in the Plum Creek Basin, where two sites were located, having an aggregate storage capacity of 509,000 acre-feet. The irrigable area of the project, under the largest scheme of development proposed, comprises 449,000 acres of level table lands between the Platte and Republican Rivers. An investigation was made of five schemes of development which lend themselves, as successive construction steps, toward the ultimate project development.

The Department of Agriculture in cooperation with the State College of Agriculture carried on investigations and experiments to determine the water-holding capacity of the subsoil, and their report on the following phases of the project was issued:

(a) The average monthly deficiency of rainfall during the growing season.

(b) The water-holding capacity of the subsoil.

(c) The approximate amount of water needed to supplement rainfall.

(d) The approximate increase in crop production made possible by subsoil storage.

The duty of water as established by the Department of Agriculture is one foot per acre, measured at the land.

In conjunction with irrigation, the possibilities of electrical power development were investigated and covered by the report. Work was completed and final report showing the results of the investigations was released in May, 1924.

NEVADA

COLORADO RIVER TRIBUTARIES

The results of the investigation of storage and irrigation possibilities in the Virgin and Muddy Valleys in Nevada and Arizona are given in a report dated September, 1923. The results of these investigations were not encouraging.

NEW MEXICO

CARLSBAD EXTENSION, PECOS RIVER INVESTIGATIONS

The results of an examination of the geology underlying the proposed No. 3 reservoir site, which is the only basin on the lower Pecos River above the Carlsbad project, are given in a report dated November, 1923, by Willis T. Lee, with the concurrence of N. H. Darton and G. B. Richardson, all geologists of the United States Geological Survey.

This report, although favorable to a reasonably satisfactory dam site, indicates that with storage to the required depth the gypsum and limestone formations in the site will probably be subject to serious leakage and the site therefore unfavorable for holding water

for the storage requirements of the project. Plans and estimates for the construction of a dam for various capacities at this site have been prepared, but on account of the unfavorable geological conditions it is probable that storage of flood waters of this river must be confined to sites located on the upper river above the gypsum and limestone formations.

A suitable site above Fort Sumner, N. Mex., has been investigated and estimates have been prepared for various capacities.

PENASCO PROJECT

Investigation of the feasibility of irrigation from the Penasco River in the vicinity of Hope, N. Mex., were continued. Field work with the exception of stream gaging was completed in August, 1923. The report just completed deals principally with the history of irrigation development on the Hope project, and the feasibility of storage to provide a supplemental supply for the area now under cultivation. The unregulated discharge of the Penasco River has provided late summer and winter irrigation at a minimum cost for an area of 1,000 to 8,000 acres since 1895, but only fragmentary run-off data are available prior to 1921, and hydrographic records are available for only the past three years. This period is not sufficient on which to base reliable estimates of the annual yield of the watershed.

The sites where storage may be obtained are of limited capacity and high cost, on account of steep gradients and narrow valleys, and it is doubtful if the project can safely undertake their construction. To provide for an increased area would require hold-over capacity for the storage of flood waters for two to five years or more. This cost would be excessive and permanent storage is also of doubtful feasibility on account of the high silt content of the flood waters.

NEW MEXICO-COLORADO

SAN JUAN BASIN INVESTIGATIONS

Investigations were conducted in the San Juan Basin in southwestern Colorado and northwestern New Mexico under a cooperative contract with the State of New Mexico, dated September 12, 1923. This investigation was suggested by the State engineer of New Mexico. The first step taken was to make a reconnaissance of the basin to determine the most probable project that would cover lands in New Mexico, with the result that the Animas project diverting from the Animas River to the west was selected.

Surveys were begun in July and completed the last of November, 1923. These surveys include 170 miles of adopted canal lines in addition to various alternate lines, and a plane-table survey of the irrigable area which was found to be 60,000 acres, net.

The principal features of the project are: the Animas reservoir of 100,000 acre-feet on the Animas River; a diversion dam in the Animas River; a main canal 45 miles in length from the Animas River, discharging into the La Plata River; a diversion dam in the La Plata River; a main canal 12 miles in length from the La Plata River to the west; the Meadows Reservoir of 10,000 acre-feet capacity; 113 miles of principal distributory canals and laterals; and a drainage system for the lower end of the project.

The project is limited by acreage rather than by water supply which is sufficient for more than double the above acreage. The project could be extended to the west to cover an additional 75,000 acres; this would materially lessen the cost per acre. This extension was not surveyed as it would cover lands in the Navajo Indian Reservation, and permission for such survey was withheld by the Bureau of Indian Affairs.

The report on the Animas project was practically completed at the end of the fiscal year.

NEW MEXICO-TEXAS

PECOS RIVER COMPACT

In March, 1923, the Governors of New Mexico and Texas approved acts passed by the legislatures of those States providing for the appointment of commissioners to negotiate an agreement concerning the storage, division, and use of the waters of the Pecos River in New Mexico and Texas. Each legislative enactment provided that a representative of the United States should meet with the commissioners of the two States interested.

Hon. R. E. Thomason of El Paso was appointed commissioner for the State of Texas and Hon. Richard H. Hanna commissioner for the State of New Mexico. C. T. Pease, an engineer of the Bureau of Reclamation, was designated by the Secretary of the Interior to represent the United States.

The commission held its first meeting at El Paso late in July, which was attended by numerous water users from Texas and New Mexico. The first two weeks in August were devoted to an inspection of the Pecos watershed and existing irrigation systems.

The commission then ordered the compilation of a memorandum giving all the principal data contained in a number of reports which were available and the preparation of a questionnaire to be sent to each irrigation association along the river.

Further action by the commission is awaiting reports from the engineers employed by the water users and the States. When these are received a form of compact and report will be submitted to the Secretary of the Interior and to the Governors of New Mexico and Texas.

OREGON

FURNISH AND WESTLAND PROJECTS

A contract dated October 4, 1923, provided for \$1,000 to be furnished by the Stanfield district and \$1,000 by the Bureau of Reclamation for the investigation of the cost of reconstruction of this system. The investigation was completed and report made March 5, 1924. This report was reviewed in June, 1924.

A study of the duty of water on the lands in the Westland irrigation district has been in progress, and an estimate of cost of the enlargement and extension of the Western canal and for the distribution system for new lands completed and report made in June, 1924. Lands involved in securing storage from the McKay Reservoir under construction aggregate 40,000 acres, and are adjacent to the present Umatilla project.

BAKER PROJECT

This project is discussed in the introduction to this report, page 16.

VALE PROJECT

This project is discussed in the introduction to this report, page 20.

OREGON-CALIFORNIA

KLAMATH PROJECT, PUMPING DIVISION

The lands included in the pumping division have a total area of about 20,000 acres. There are 14 separate areas adjacent to project canals, varying in size from about 200 to 4,000 acres; proposed lifts are from 25 to 70 feet. The Malin irrigation district, the Shasta View irrigation district, and the Sunnyside irrigation district have executed contracts with the United States for a water supply. The Sunnyside irrigation district is actually watering about 475 acres. No construction has been done by the Malin or Shasta View districts. During the year 1923 efforts were made by these two districts to sell bonds, but satisfactory sales could not be made.

KLAMATH PROJECT, LOWER KLAMATH LAKE DIVISION

There are about 76,000 acres, gross, of marsh lands in this division; 27,000 acres are in Oregon within the boundaries of the Klamath drainage district and 49,000 acres in California. The Klamath drainage district has contracted for a water right from the United States and is proceeding to construct its own drainage and irrigation system. The ownership of a large portion of the marsh lands in California is in doubt. The area involved is claimed by both the State and the United States. It will take court action to determine the ownership.

During October, 1923, Prof. Chas. F. Shaw of the University of California, made an investigation of soil and agricultural conditions of the marsh lands of California. Report was made to the chief engineer under date of December 7. His conclusions were that the marsh lands in California did not offer attractive possibilities for development in the near future.

OREGON-IDAHO

OWYHEE PROJECT

This project is discussed in the introduction to this report, page 18.

OREGON-WASHINGTON

UMATILLA RAPIDS PROJECT

The investigation of the Umatilla Rapids project as outlined in the twenty-second annual report was continued throughout the year. Extensive diamond drill borings were made at the dam site and preliminary canal lines were run in the field for the development, by pumping for irrigation, of extensive areas of agricultural land in the States of Oregon and Washington.

All field work was completed about April 1, 1924, after which date designs and estimates of cost for the dam and power house, pumping plants, canals, and canal structures were in progress. At the close of the fiscal year designs and estimates were nearly complete and the preparation of the report was under way.

Under a cooperative contract the State of Oregon contributed \$10,000 to assist in carrying out the investigations.

TEXAS

RED BLUFF RESERVOIR

The report on the geology at the dam site drilled in 1922 was made by Willis T. Lee of the United States Geological Survey in November, 1923. N. H. Darton, who had made an examination and a preliminary report in 1922, concurred with Mr. Lee in his opinion that the site was unsatisfactory for the construction of a tight reservoir. At the request of the Pecos Valley Water Users' Association of Texas, three other sites selected were drilled during the fall of 1923 and the spring of 1924, without finding satisfactory material for a tight dam site or reservoir. A complete record of the dam sites drilled will be compiled for future reference.

UTAH

SALT LAKE BASIN PROJECT

This project is discussed in the introduction to this report, page 23.

CACHE VALLEY INVESTIGATIONS

These investigations are being conducted under cooperative contracts between the United States and the State of Utah. The irrigable lands are located in Cache County in northern Utah. At present a large part of the area has an early or flood water right, the irrigation plan contemplating the supplementing of this early right with a late storage water right and a full water right to the lands at present with no water right at all. Four storage sites have been surveyed on the Logan River and two on the Little Bear River; also enlargements of present canals or entirely new canals have been surveyed for conveyance of the water to the areas on both sides of the valley. The irrigable area in the project amounts to approximately 66,000 acres. The preliminary report will be made during the fiscal year 1925.

SPANISH FORK—LEHI DRAINAGE INVESTIGATIONS

Reading and recording of water levels in observation holes on the area under investigation were carried on until December 31, 1923, when the work was discontinued.

UTAH LAKE INVESTIGATIONS

During July, 1923, 61 soil samples were taken from the bottom of Provo Bay, which it is proposed to separate from Utah Lake by

diking, and forwarded to the Bureau of Soils, at Washington, D. C., for analysis. Points where samples were taken and soundings made were located by resection on plane-table in boat.

Complete water supply studies in connection with Strawberry Reservoir, Spanish Fork River, and Willow Creek were begun during the latter part of the year.

These studies are being made to determine the probable amount of water from these sources available for irrigation use on lands outside the Strawberry Valley project in Utah and Salt Lake counties.

CASTLE PEAK PROJECT

Runoff records for securing water supply data were continued throughout the year.

PRICE RIVER PROJECT

No work in connection with this project was undertaken by the Bureau of Reclamation during the year; however, the district drilled and tested the Pleasant Valley dam site on Fish Creek and through the sale of district bonds to the contractor is undertaking the construction of a rock-fill dam at this point.

UTAH—COLORADO

LOWER WHITE RIVER INVESTIGATIONS

These investigations have been conducted under cooperative contracts between the United States and the State of Utah. The lands to be irrigated are located in Colorado as well as Utah. In 1922, a canal location was made for the use of White River water for the irrigation of the project. During 1923, a canal location was run for diverting water from the Yampa River. In each case the canal locations cross very rough, mountainous land requiring a large amount of tunneling and concrete bench fluming. The irrigable area in the project varies from 77,600 acres to 85,500 acres under different schemes investigated. In March, 1924, a preliminary report was made indicating that on account of the cost, the irrigation of the project by water from either source would be infeasible.

WASHINGTON

COLUMBIA BASIN PROJECT

The investigation of this project is being made under the act of Congress of February 21, 1923, making a special appropriation of \$100,000 for this purpose. The work is directed by a committee consisting of F. M. Goodwin, Assistant Secretary of the Interior, the Commissioner, and the chief engineer of the Bureau of Reclamation. The Bureau of Soils and the Geological Survey have cooperated with the Bureau of Reclamation in this investigation.

During the summer and fall of 1923 field surveys of the soils, geology, water supply, and storage possibilities were completed and dams and canals located for the project. Test borings by diamond drill were made at 7 dam sites and 49 holes were drilled.

Estimates of the cost of the project by various plans were made and reports prepared on the several engineering and construction features and costs; soil survey and land classification; geologic conditions affecting reservoirs, dams, and tunnels; and water supply, storage, and power possibilities.

A board of engineers reviewed the above feature reports and submitted their conclusion to the Chief Engineer on April 6, 1924. Further conferences of consulting engineers are contemplated before the final report of the investigation is prepared. The field office at Spokane was closed in February, 1924, and the remainder of the office work was done in the Denver office.

YAKIMA PROJECT EXTENSIONS

Proposed extensions to the Yakima project include four divisions, the Kittitas, Roza, Moxee, and Kennewick.

A board of engineers, on October 15 to 24, 1923, reviewed the plans and estimates for the four divisions, held hearings, and visited each of the divisions in order to determine which should be constructed first. Their recommendation favored the Kittitas division, which is discussed in the introduction to this report, page 12.

A topographical map of the Kennewick division was completed during October and November; this was the only work performed on any of the extensions during the fiscal year.

EXPERIMENTAL INVESTIGATIONS

Since the establishment of the Bureau of Reclamation considerable experimental work has been in progress to determine constants and coefficients to be used in designing irrigation structures. During the past year particular attention has been given to the consumptive use of water, determining the coefficients of roughness for channels and conduits, and coefficients of discharge for measuring devices.

During the fiscal year 1924, duty of water studies have been under way on the Yakima, Shoshone, and Rio Grande projects, and experiments for the determination of friction, bend, and transition losses, on the King Hill project.

At the hydraulic laboratory on the Boise project studies have been made of numerous proposed types of measuring devices, and an attempt has been made to estimate rating curves for turnout gates of the ordinary type.

On the Klamath project a set of observations was made to determine the coefficients of roughness in a precast concrete flume.

A considerable quantity of field data has been accumulated in connection with the above program and it is hoped that notes can be worked up and results made available at an early date.

The bureau is cooperating with a committee of the Engineering Foundation in the preparation of a series of tests for determining the actual stresses developed in arch dams. Equipment has been purchased and plans prepared for conducting experiments of this kind at the Clear Creek Dam on the Yakima project and at the proposed Gerber dam on the Klamath project.

A series of tests was run at Bellevue, Colo., on a model of a side-channel spillway for the purpose of substantiating certain theories as to flow through structures of this type.

APPENDIX

LEGISLATION

APPROPRIATION ACT

[Extracts from an act making appropriations for the Department of the Interior for the fiscal year ending June 30, 1925, and for other purposes. (Act June 5, 1924, Public No. 199, 43 Stat 390.)]

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the following sums are appropriated, out of any money in the Treasury not otherwise appropriated, for the Department of the Interior for the fiscal year ending June 30, 1925, namely:

OFFICE OF THE SECRETARY

* * * * *

For the purchase or exchange of professional and scientific books, law books, and books to complete broken sets, periodicals, directories, and other books of reference relating to the business of the department by the several offices and bureaus of the Interior Department herein named there is hereby made available from any appropriations made for such bureau or office not to exceed the following respective sums: * * * Bureau of Reclamation, \$1,500;

* * * * *

That the annual reports of the department and of all its bureaus and establishments, including the Bureau of Reclamation, shall not exceed a total of one thousand two hundred and fifty pages.

* * * * *

BUREAU OF INDIAN AFFAIRS

* * * * *

For continuing construction, maintenance, and operation of the irrigation systems on the Flathead Indian Reservation, in Montana, by and under the direction of the Commissioner of Indian Affairs, including the purchase of any necessary rights or property, \$150,000 (reimbursable).

For maintenance and operation of the irrigation systems on the Fort Peck Indian Reservation, in Montana, by and under the direction of the Commissioner of Indian Affairs, including the purchase of any necessary rights or property, \$15,000 (reimbursable).

For continuing construction, maintenance, and operation of the irrigation systems on the Blackfeet Indian Reservation in Montana, by and under the direction of the Commissioner of Indian Affairs, including the purchase of any necessary rights or property, \$20,000 (reimbursable).

* * * * *

For reclamation and maintenance charges on lands allotted to Paiute Indians within the Newlands project, Nevada, \$6,000; for payment of annual drainage assessments against said lands, \$2,100; in all, \$8,100, reimbursable from any funds of the said Indians now or hereafter available.

* * * * *

For reclamation and maintenance charges on Indian lands within the Yuma Reservation, California, and on ten acres within each of the eleven Yuma homestead entries in Arizona, under the Yuma reclamation project, \$60,000, reimbursable as provided by the Act of March 3, 1911 (Thirty-sixth Statutes at Large, page 1063).

* * * * *

For reimbursement to the reclamation fund the proportionate expense of operation and maintenance of the reservoirs for furnishing stored water to the lands in Yakima Indian Reservation, Washington, in accordance with the provisions of section 22 of the Act of August 1, 1914 (Thirty-eighth Statutes at Large, page 604), \$11,000.

* * * * *

BUREAU OF RECLAMATION

The following sums are appropriated out of the special fund in the Treasury of the United States created by the Act of June 17, 1902, and therein designated "the reclamation fund," to be available immediately:

For all expenditures authorized by the Act of June 17, 1902 (Thirty-second Statutes, page 388), and Acts amendatory thereof or supplementary thereto, known as the reclamation law and all other Acts under which expenditures from said fund are authorized, including salaries in the District of Columbia and elsewhere; examination of estimates for appropriations in the field; refunds for over-collections hereafter received on account of water-right charges, rentals, and deposits for other purposes; printing and binding, not exceeding \$30,000; purchase, maintenance, and operation of horse-drawn or motor-propelled passenger-carrying vehicles; payment of damages caused to the owners of lands or private property of any kind by reason of the operations of the United States, its officers or employees, in the survey, construction, operation, or maintenance of irrigation works, and which may be compromised by agreement between the claimant and the Secretary of the Interior; and payment for official telephone service in the field hereafter incurred in case of official telephones installed in private houses when authorized under regulations established by the Secretary of the Interior:

Salt River project, Arizona: For examination of project and project accounts, \$5,000;

Yuma project, Arizona-California: For operation and maintenance, continuation of construction, and incidental operations, \$765,000, of which not to exceed \$250,000 may be expended for the construction of a hydroelectric power plant at the syphon drop on the main canal: *Provided*, That no part of said sum of \$250,000 shall be expended until contracts have been entered into by a majority of the water-right applicants and entrymen, for the lands to be charged with the cost of said hydroelectric power plant in the manner provided by section 4 of the Reclamation Extension Act approved August 13, 1914 (Thirty-eighth Statutes at Large, page 686), wherein said water-right applicants and entrymen shall agree to repay the cost of said power plant chargeable against their lands, in twelve equal annual instalments, commencing December 1, 1925;

Orland project, California: For operation and maintenance, continuation of construction, and incidental operations, \$40,000;

Grand Valley project, Colorado, including Orchard Mesa division: For operation and maintenance, continuance of construction, and incidental operations, \$465,000;

Uncompahgre project, Colorado: For operation and maintenance, continuation of construction, and incidental operations, \$150,000;

Boise project, Idaho: For operation and maintenance, continuation of construction, and incidental operations: *Provided*, That the expenditure for drainage shall not exceed the amount paid by the water users pursuant to the provisions of the Boise public notice dated February 15, 1921, except for drainage in irrigation districts formed under State laws and upon the execution of agreements for the repayment to the United States of the costs thereof, \$1,080,000: *Provided further*, That no part of the money appropriated under this paragraph shall be expended for the development of electric power until the Secretary of the Interior shall have secured, subject to the needs of the Boise project, a contract with the Gem Irrigation District, providing for the purchase by that district, for a period to be determined by the Secretary of the Interior, of the electric power necessary for the irrigation of the lands of said district: *And provided further*, That the rates in such contract shall be sufficient to include interest at five per centum per annum on the cost of such power development plus a reasonable depreciation on the power plant, as found by the Secretary of the Interior, and that the contract shall provide that before delivery of power in any season the district shall furnish security satisfactory to the Secretary of the Interior to insure payment to the Government of the power charges for such season, and that such contract shall be entered into only in the event that the holders of not less than ninety per centum of the face value of the bonded and warrant indebtedness of the district shall subordinate their claims to the obligations of the district to the Government under such contract: *And provided further*, That in the event power is furnished from the said power plant to more than one contractor, then the rates for power shall be fixed so that each such contractor, including said district, shall pay only its proper proportionate share of said interest and depreciation, as found by the Secretary of the Interior;

King Hill project, Idaho: For operation and maintenance, continuation of construction, and incidental operations, \$40,000;

Minidoka project, Idaho: For operation and maintenance, continuation of construction, and incidental operations, \$1,045,000: *Provided*, That no part of this appropriation (and no part of any unencumbered balance of the 1924 appropriation for the Minidoka project) shall be expended on the American Falls Reservoir until (1) all acts have been performed that are necessarily precedent to the confirmation of title in fee in the United States for said reservoir of such Indian lands as are essential to the construction of the same; (2) companies and districts which have contracted to co-operate with the United States in the construction of said reservoir and have contracted to participate in said reservoir to an aggregate amount of at least three hundred and sixty-five thousand acre-feet shall have paid to the United States their due proportionate share of all moneys expended by the United States on said reservoir prior to the date of said payments, including interest at the rate of 6 per centum per annum from the time such moneys were advanced by the United States; (3) The American Falls Reservoir district and the Empire Irrigation district shall each have filed with the Secretary of the Interior an agreement binding each of said districts to the elimination of the second paragraph of article 46 of their respective contracts of June 15, 1923, with the United States; and (4) the said companies and districts shall have paid to or deposited with the United States cash or United States Government securities amounting to a total of at least \$1,500,000: *Provided further*, That no contractor shall secure a right to the use of water from said reservoir except under a contract containing the provision that the contractor shall, as a part of the construction cost, pay interest at the rate of 6 per centum per annum upon the contractor's proper proportionate share, as found by the Secretary of the Interior, of the moneys advanced by the United States on account of the construction of said reservoir prior to the date of the contract;

Huntley project, Montana: For operation and maintenance, continuation of construction, and incidental operations, \$150,000;

Milk River project, Montana: For operation and maintenance, continuation of construction, and incidental operations, \$315,000;

Sun River project, Montana: For operation and maintenance, continuation of construction, and incidental operations, \$150,000;

Lower Yellowstone project, Montana-North Dakota: For operation and maintenance, continuation of construction, and incidental operations, \$95,000;

North Platte project, Nebraska-Wyoming: For operation and maintenance, continuation of construction, and incidental operations, \$1,450,000;

Newlands project, Nevada: For operation and maintenance, continuation of construction, and incidental operations, \$400,000, of which amount \$245,000 shall be used for drainage purposes, but only after execution by the Truckee-Carson irrigation district of an appropriate reimbursement contract satisfactory in form to the Secretary of the Interior, and after confirmation of such contract by decree of a court of competent jurisdiction and final decision on all appeals from such decree;

Carlsbad project, New Mexico: For operation, maintenance, and incidental operation, \$50,000;

Rio Grande project, New Mexico-Texas: For operation and maintenance, continuation of construction, and incidental operations, \$706,000;

Williston project (formerly North Dakota pumping project), North Dakota: For operation, maintenance, and incidental operations, \$100,000;

Baker project, Oregon: For investigation, commencement of construction, and incidental operations, the unexpended balance of the appropriation for this purpose for the fiscal year 1924 is reappropriated and made available for the fiscal year 1925;

Umatilla project, Oregon: For operation and maintenance, continuation of construction, and incidental operations, \$940,000;

Klamath project, Oregon-California: For operation and maintenance, continuation of construction, and incidental operations, \$695,000;

Belle Fourche project, South Dakota: For operation and maintenance, continuation of construction, and incidental operations, \$185,000;

Strawberry Valley project, Utah: For operation and maintenance, continuation of construction, and incidental operations, \$40,000;

Okanogan project, Washington: For operation and maintenance, continuation of construction, and incidental operations, \$70,000;

Yakima project, Washington: For operation and maintenance, continuation of construction, and incidental operations, \$720,000;

Riverton project, Wyoming: For operation and maintenance, continuation of construction, and incidental operations, \$650,000;

Shoshone project, Wyoming: For operation and maintenance, continuation of construction, and incidental operations, \$475,000;

Secondary projects: For cooperative and miscellaneous investigations, \$50,000;

For continued investigation of the feasibility of irrigation, water storage, and related problems on the Colorado River, and investigation of water sources of said river, \$25,000;

Under the provisions of this Act no greater sum shall be expended, nor shall the United States be obligated to expend, during the fiscal year 1925, on any reclamation project appropriated for herein, an amount in excess of the sum herein appropriated therefor, nor shall the whole expenditures or obligations incurred for all of such projects for the fiscal year 1925 exceed the whole amount in the "reclamation fund" for that fiscal year;

Ten per centum of the foregoing amounts shall be available interchangeably for expenditures on the reclamation projects named; but not more than 10 per centum shall be added to the amount appropriated for any one of said projects, except that should existing works or the water supply for lands under cultivation be endangered by floods or other unusual conditions, an amount sufficient to make necessary emergency repairs shall become available for expenditure by further transfer of appropriation from any of said projects upon approval of the Secretary of the Interior;

Whenever, during the fiscal year ending June 30, 1925, the Commissioner of the Bureau of Reclamation shall find that the expenses of travel, including the local transportation of employees to and from their homes to the places where they are engaged on construction or operation and maintenance work, can be reduced thereby, he may authorize the payment of not to exceed three cents per mile for a motor cycle or seven cents per mile for an automobile used for necessary official business;

Total, from Reclamation fund, \$10,856,000.

RECLAMATION PROVISIONS OF APPROPRIATION ACT FOR DEPARTMENT OF AGRICULTURE

Extracts from an act making appropriations for the Department of Agriculture for the fiscal year ending June 30, 1925, and for other purposes. (Act June 5, 1924, Public No. 201, 43 Stat. 432)]

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the following sums are appropriated, out of any money in the Treasury not otherwise appropriated, for the Department of Agriculture for the fiscal year ending June 30, 1925, namely:

* * * * *

For investigations in connection with western irrigation agriculture, the utilization of lands reclaimed under the Reclamation Act, and other areas in the arid and semiarid regions, \$93,175;

* * * * *

To enable the Secretary of Agriculture to encourage and aid in the agricultural development of the Government reclamation projects; to assist, through demonstrations, advice, and in other ways, settlers on the projects; and for the employment of persons and means necessary in the city of Washington and elsewhere, \$36,460.

* * * * *

INDIAN LANDS FOR AMERICAN FALLS RESERVOIR

An Act authorizing the acquiring of Indian lands on the Fort Hall Indian Reservation, in Idaho, for reservoir purposes in connection with the Minidoka irrigation project. (Act May 9, 1924, Public, No. 116, 43 Stat. 117)

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That subject to payment being made as provided herein, there is hereby granted to the United States, its successors and assigns, for the proposed American Falls Reservoir on the Snake River under the Minidoka Federal irrigation project, in Idaho, all right, title, and interest the Indians have to the tribal and allotted lands within that section of the Fort Hall Indian Reservation commonly referred to as the Fort Hall Bottoms, which lands will be inundated by the impounding of one million seven hundred thousand acre-feet of water within said proposed reservoir, together with a five-foot freeboard the elevation of which shall be established, using as a basis the one million five

hundred thousand acre-foot contour line as shown in what is known as the Dyer-Dietz-Banks appraisal of Indian lands dated December 30, 1922, and on file in the Department of the Interior subject to the reservation of an easement to the Fort Hall Indians to use the said lands for grazing, hunting, fishing, and gathering of wood, and so forth, the same way as obtained prior to this enactment, in so far as such uses shall not interfere with the use of said lands for reservoir purposes.

SEC. 2. That the Secretary of the Interior be, and he is hereby, authorized to acquire by agreement or condemnation proceedings the area of allotted lands described in section 1. The value fixed by agreement with the allottees, and in any case where it may become necessary to institute condemnation proceedings for such purpose, the value of the allotment or allotments involved as determined by such proceedings, shall be paid out of the sum deposited to the credit of the Fort Hall Indians as provided in section 3 hereof.

SEC. 3. That in consideration of the rights granted in section 1 hereof, of both tribal and allotted lands, there shall be deposited in the Treasury of the United States to the credit of the Fort Hall Indians the total sum of \$700,000, which sum shall be taken from moneys appropriated for the construction of said reservoir: *Provided*, That the said sum of \$700,000, when so deposited, shall draw interest at the rate of 4 per centum per annum.

SEC. 4. Should any lands above the five-foot freeboard, as provided in section 1, be damaged on account of the reservoir, the amount of the damage shall be determined by a board consisting of three members—two of which shall be appointed by the Secretary of the Interior—one from the Bureau of Indian Affairs, and one from the Bureau of Reclamation, the third member, who shall be a disinterested party, to be selected by the two so appointed. The amount of damage as fixed by the board shall be taken from moneys appropriated for the construction of said reservoir and deposited in the Treasury of the United States to the credit of the Fort Hall Indians.

SEC. 5. That there is hereby authorized to be appropriated not to exceed \$100,000 of the money when deposited to the credit of the Fort Hall Tribe of Indians for use in relocating, enlarging, and reconstructing the main canal of the Fort Hall irrigation project to provide irrigation facilities for Indian lands situated in the southern portion of the Fort Hall Reservation, commonly known as the Michaud Flats, which amount so expended shall be reimbursed to the tribe by the Indians whose lands are benefitted, on a per acre basis in accordance with such rules and regulations as the Secretary of the Interior may prescribe: *Provided*, That in all cases where the Indian title becomes extinguished prior to total reimbursement of the sum assessed against any particular allotment, the party acquiring title to such allotment shall be required to execute an agreement before any water will be furnished therefor, providing for the payment of construction charges assessed against such lands, and for the payment of the annual operation and maintenance charges.

DRAINAGE FOR INDIAN LANDS ON NEWLANDS IRRIGATION PROJECT

An Act to amend an Act entitled "An Act authorizing an appropriation to meet proportionate expenses of providing a drainage system for Piute Indian lands in the State of Nevada within the Newlands reclamation project of the Reclamation Service," approved February 14, 1923. (Act of June 7, 1924, Public No. 231, 43 Stat. 595.)

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the Act entitled "An Act authorizing an appropriation to meet proportionate expenses of providing a drainage system for Piute Indian lands in the State of Nevada within the Newlands reclamation project of the Reclamation Service," approved February 14, 1923, be, and the same is hereby, amended to read as follows:

"That there is hereby authorized to be appropriated, out of any money in the Treasury not otherwise appropriated, the sum of \$49,603.05, payable in twenty annual installments of \$2,500 each, except the last, which shall be the amount remaining unpaid, for the purpose of meeting the proportionate expense of providing a drainage system for four thousand eight hundred and eighty-seven acres of Piute Indian lands in the State of Nevada within the Newlands project of the Reclamation Service.

"The money herein authorized to be appropriated shall be reimbursed in accordance with the provisions of law applicable to said Indian lands."

INVESTIGATIONS ON THE RIO GRANDE

An Act providing for a study regarding the equitable use of the waters of the Rio Grande below Fort Quitman, Texas, in cooperation with the United States of Mexico. (Act May 13, 1924, Public No. 118, 43 Stat. 118).

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the President is hereby authorized to designate three special commissioners to cooperate with representatives of the United States of Mexico in a study regarding the equitable use of the waters of the Rio Grande below Fort Quitman, Texas, with a view to their proper utilization for irrigation and other beneficial uses. One of the commissioners so appointed shall be an engineer experienced in such work. Upon completion of such study the results shall be reported to Congress.

SEC. 2. The sum of \$20,000 is hereby authorized to be appropriated out of any moneys in the Treasury not otherwise appropriated for carrying out the provisions hereof.

COOPERATIVE IRRIGATION INVESTIGATIONS IN WYOMING, OREGON, AND CALIFORNIA

Joint Resolution authorizing an investigation of the proposed Casper-Alcova irrigation project, Natrona County, Wyo.; the Deschutes project in the State of Oregon, and the Southern Lassen irrigation project in Lassen County, Calif. (Senate Joint Resolution of June 7, 1924, No. 114, 43 Stat. 668)

Resolved by the Senate and House of Representatives of the United States of America in Congress assembled, That the Secretary of the Interior be, and he is hereby, authorized and directed to prepare and submit to Congress at the beginning of the next regular session plans and estimates of the character and cost of structures necessary for the construction and completion of the proposed Casper-Alcova irrigation project in Natrona County, Wyo., the Deschutes project in the State of Oregon, and the Southern Lassen irrigation project, in Lassen County, Calif.: *Provided,* That at least one-half the cost of all such investigations, plans, and estimates shall be advanced by the State in which the project is located, or by parties interested.

CONGRESSIONAL INVESTIGATION OF TRI-COUNTY IRRIGATION PROJECT IN NEBRASKA

Resolution authorizing the Committee on Irrigation and Reclamation to appoint a subcommittee to visit during the vacation the tri-county project in Nebraska and report to the full committee on the practicability of the same. (Senate Resolution of June 7, 1924, No. 251, 43 Stat. —)

Whereas in the Sixty-seventh Congress, a Senate joint resolution (S. J. Res. 215) was approved September 22, 1922, as follows:

"Resolved by the Senate and House of Representatives of the United States of America in Congress assembled, That the Secretary of the Interior, upon the payment to him in advance of the necessary funds to defray the expenses thereof, be, and he is hereby, authorized to make an additional investigation of the tri-county project in Nebraska, comprising the counties of Gosper, Phelps, and Kearney, in said State, and to extend said investigation into Adams County, Nebraska, with a view of ascertaining whether it is practicable to convey for irrigation purposes flood waters from the Platte River onto lands in said counties";

And

Whereas in accordance with such resolution a survey of said tri-county project in Nebraska has been made by the Bureau of Reclamation, and the expenses of such survey and investigation amounting to more than \$15,000 have been paid for by the State of Nebraska and the citizens living in the vicinity of said project: Now, therefore, be it

Resolved, That the Committee on Irrigation and Reclamation be authorized to appoint a subcommittee to visit the tri-county project in Nebraska during the recess of Congress and report to the full committee on the practicability of said project and the advisability of installing the same. There is hereby appropriated out of the contingent fund of the Senate, the sum of \$300 for the purpose of defraying the expenses of said investigation.

FINANCIAL DATA, CONSOLIDATED AND BY PROJECTS

TABLE 1.—Consolidated financial statement, June 30, 1924

DEBIT SIDE

Primary projects:			
Cost of irrigation works (Table 4)—			
Original construction	\$144,566,620.00		
Supplemental construction	6,118,157.33		
Value of works taken over	1,881,607.99		
Total construction cost		\$152,566,385.32	
Operation and maintenance prior to public notice (net)	2,284,671.97		
Operations and maintenance deficits and arrearages to be paid with construction	1,581,350.60		
		3,866,022.57	
		156,432,407.89	
Less—			
Abandoned works and nonreimbursable cost (net)	2,357,649.94		
Construction revenues	4,223,777.30		
Contributed funds	1,023,136.38		
		7,604,563.62	
Total to be repaid by water users			\$148,827,844.27
Operation and maintenance results (Table 9)			1,147,528.77
Secondary projects:			
Cost of investigations	2,135,948.49		
Less: Contributed funds	475,783.46		
			1,660,165.03
Plant and equipment			2,148,557.29
Materials and supplies			978,173.57
Accounts receivable:			
Current accounts due (Tables 10, 11, 12, 13, 14, 15)		6,358,801.99	
Deferred accounts not due		91,398,566.68	
			97,757,368.67
Prepaid civil service retirement fund			8,534.29
Unadjusted debits:			
General office expense, undistributed disbursement vouchers in transit, etc.			66,124.09
Cash (Table 2):			
Balance on hand, reclamation fund	5,471,646.72		
Balance on hand, Wind River Indian fund	303.61		
		5,471,950.33	
Collections in transit		23,691.97	
			5,495,642.30
Total debits			258,089,938.28

CREDIT SIDE

Security for repayment of cost of irrigation works:			
Contracted construction repayments (Table 5)			\$111,377,795.52
Accounts payable:			
Contractors' earnings		\$69,598.18	
Labor		306,850.21	
Purchases		244,832.74	
Transportation		241,115.37	
Miscellaneous		449,040.07	
			1,311,436.57
Unapplied credits:			
Forfeitures, penalties, hospital, rentals from withdrawn lands, etc.			1,269,570.82
Unadjusted credits—			
Cost adjustments, collection vouchers in transit, etc.			165,159.75
Government aid for reclamation of arid lands:			
Reclamation fund (Table 3)		125,905,028.21	
Special funds—			
Judgments, Court of Claims		550,347.58	
Rio Grande Dam		1,000,000.00	
Increase of compensation (net)		2,759,890.98	
Wind River Indian (Riverton)		359,479.65	
Advances to reclamation fund (bond loan)	\$20,000,000.00		
Less: Amount repaid	4,000,000.00		
		16,000,000.00	
Total		146,574,746.42	
Less: Nonreimbursable appropriation, Rio Grande Dam (Table 4)		1,000,000.00	
		145,574,746.42	
Less: Impairment of funds—			
Abandoned construction works (Table 4)	928,181.82		
Nonreimbursable construction cost (Table 4)	429,468.12		
Deficits-operation and maintenance (Table 9)	251,120.86		
		1,608,770.80	
Total credits			143,965,975.62
			258,089,938.28

TABLE 2.—*Available funds, expenditures, and balances, fiscal year 1924*

	Appropriation	Reclamation fund projects		Other projects and investigations		Increase of compensation
		Reclamation fund	Wind River Indian (River-ton)	Yuma Auxiliary	General investigations	
Balance on hand July 1, 1923.....		\$4, 649, 267. 46	\$303. 61	\$76, 536. 78	\$258, 591. 76	-----
Proceeds from sale of public lands.....	\$705, 076. 48	-----	-----	-----	-----	-----
Proceeds from sale of townlots.....	5, 739. 32	-----	-----	-----	-----	-----
Proceeds from oil leasing act:		-----	-----	-----	-----	-----
Past production.....	298, 448. 16	-----	-----	-----	-----	-----
Current production.....	6, 395, 459. 99	-----	-----	-----	-----	-----
Proceeds from potassium royalties.....	3, 792. 91	-----	-----	-----	-----	-----
Proceeds from Federal power licenses.....	3, 048. 13	-----	-----	-----	-----	-----
Project collections.....	5, 743, 835. 71	-----	-----	-----	-----	-----
		13, 155, 400. 70	-----	-----	-----	-----
From general treasury.....		-----	-----	-----	-----	\$288, 310. 68
From miscellaneous collections.....	9, 918. 03	-----	-----	-----	19, 177. 55	-----
From sale of lands.....	947. 81	-----	-----	-----	-----	-----
From sale of water rights.....	32, 525. 62	-----	-----	43, 391. 46	-----	-----
		17, 804, 668. 16	303. 61	119, 928. 24	277, 769. 31	288, 310. 68
Expenditures:						
Repayment bond loan.....	1, 000, 000. 00	-----	-----	-----	-----	-----
Disbursements.....	11, 333, 021. 44	-----	-----	-----	-----	-----
		12, 333, 021. 44	-----	67, 637. 74	185, 782. 14	-----
Reclamation fund projects.....	282, 516. 49	-----	-----	-----	-----	-----
Yuma auxiliary project.....	1, 509. 90	-----	-----	-----	-----	-----
General investigations.....	4, 284. 29	-----	-----	-----	-----	288, 310. 68
Balance on hand June 30, 1924.....		5, 471, 646. 72	303. 61	52, 290. 50	91, 987. 17	-----

TABLE 3.—*Accretions to reclamation fund, by States*

States	Sales of public lands		Sales of reclamation townsites		Proceeds from oil leasing act ¹		Potassium royalties and rentals ¹	Total to June 30, 1924
	Fiscal year 1924	To June 30, 1924	Fiscal year 1924	To June 30, 1924	Past production	Current production		
Alabama.....						\$44,866.50		\$44,866.50
Arizona.....	\$50,455.20	\$2,143,593.84						2,143,593.84
California.....	66,133.90	7,349,372.55			\$2,393,093.70	1,858,267.64	\$19,971.55	11,620,705.44
Colorado.....	91,163.01	9,705,171.50				31,378.75		9,736,550.25
Idaho.....	59,866.43	6,699,330.19	\$1,273.11	\$177,112.18		196.11		6,876,638.48
Kansas.....	2,764.55	1,033,427.76						1,033,427.76
Louisiana.....						1,577.48		1,577.48
Montana.....	83,078.63	14,738,099.11	1,516.69	122,160.93		415,234.43		15,275,494.47
Nebraska.....	753.77	2,081,405.66						2,081,405.66
Nevada.....	18,826.77	917,020.92						917,020.92
New Mexico.....	96,302.98	5,753,448.32				4,019.11		5,757,467.43
North Dakota.....	2,248.54	12,205,005.49				9,332.12		12,214,337.61
Oklahoma.....	3,020.38	5,917,843.10						5,917,843.10
Oregon.....	38,985.00	11,643,916.17				64.20		11,643,916.17
South Dakota.....	4,338.68	7,682,249.15	300.00	74,875.92				7,757,189.27
Utah.....	67,021.19	3,608,461.85				55,647.40		3,664,109.25
Washington.....	21,255.58	7,264,277.21				7,612.19		7,271,889.40
Wyoming.....	129,394.21	7,665,336.35	2,649.52	208,010.97	2,121,620.27	11,946,895.71		21,942,083.30
Total.....	705,076.48	106,408,179.17	5,739.32	582,160.00	4,514,713.97	14,375,091.64	19,971.55	125,900,116.33
Proceeds Federal water-power licenses ¹							4,911.88	4,911.88
Grand total.....								125,905,028.21

¹ Totals to June 30, 1924.

Total proceeds for fiscal year 1924—

Oil leasing act, past production.....

Oil leasing act, current production.....

Potassium royalties and rentals.....

Federal water power licenses.....

: Contrs.

\$298,448.16

6,395,459.99

3,792.91

3,048.13

TABLE 4.—Consolidated statement by projects of construction cost of irrigation works, other cost reimbursable with construction, and amount to be repaid by water users

[illegible]

1 Abandoned works:
Garden City---
Hondo-----
Buford-Trenton

Nonreimbursable cost:

Salt River -
Uncompah

Nonreimbursable appropriation:

Rio Grande.....	1,000,000.00
Nonreimbursable construction cost is due to repayment contracts with water users eliminating amounts specified. Nonreimbursable appropriation, 34 Stat. 1357.	

² Contra.

\$7,823 transferred to secondary projects accounts. Actual cost for year, \$30,712.15.

*\$1,822,186.50 transferred to American Falls. Actual cost for year, \$83,207.81.

TABLE 4.—Consolidated statement by projects of construction cost of irrigation works, other cost reimbursable with construction, and amount to be repaid by water users—Continued

State and project	Construction cost		Operation and maintenance before public notice (net)		Operation and maintenance deficits and arrearages		Construction revenues and contributed funds (contra)		Abandoned works and nonreimbursable (contra)	Total to be repaid by water users	
	Fiscal year 1924	To June 30, 1924	Fiscal year 1924	To June 30, 1924	Fiscal year 1924	To June 30, 1924	Fiscal year 1924	To June 30, 1924		Fiscal year 1924	To June 30, 1924
Montana-North Dakota: Lower Yellowstone.....	12, 791.48	3, 165, 557.14	2 368.86	2 368.86	-----	522, 500.05	2, 946.54	44, 669.91	-----	9, 476.08	3, 643, 018.42
Nebraska-Wyoming: North Platte.....	1, 647, 883.93	15, 148, 630.80	168.57	496, 558.09	-----	82, 413.95	30, 795.84	151, 606.84	-----	1, 617, 256.96	15, 375, 906.00
Nevada: Newlands.....	308, 145.98	7, 454, 705.66	2 174.28	2 1, 354.51	-----	2, 022.93	14, 295.22	172, 135.73	-----	293, 676.48	7, 283, 238.35
New Mexico: Carlsbad.....	-----	1, 418, 696.90	2 1, 190.27	2 11, 705.28	-----	1, 934.00	994.19	23, 161.35	-----	2 2, 184.46	1, 385, 764.27
Hondo.....	-----	339, 491.68	2 9, 165.19	32, 916.52	-----	-----	2 9, 165.19	541.03	371, 867.17	-----	-----
New Mexico-Texas: Rio Grande.....	908, 013.19	13, 334, 707.64	2 8, 927.68	2 255, 185.72	-----	-----	1, 659.56	35, 892.96	1, 000, 000.00	897, 425.95	12, 043, 628.96
North Dakota: Burlington-Trenton.....	-----	223, 423.06	-----	2 31.75	2 81, 304.27	-----	25.00	1, 551.62	2 221, 839.69	196, 901.45	657, 008.63
Williston.....	27, 984.18	498, 782.87	-----	2 445.71	168, 471.56	-----	2 445.71	10, 080.80	-----	674, 582.60	3, 548, 584.70
Oregon: Umatilla.....	676, 226.60	3, 380, 731.92	-----	-----	190, 627.95	-----	1, 644.00	22, 775.17	-----	-----	-----
Oregon-California: Klamath.....	393, 851.83	4, 466, 870.93	1, 719.81	62, 152.27	-----	3, 712.03	16, 405.10	177, 443.41	-----	379, 166.54	4, 355, 291.82
South Dakota: Belle Fourche.....	-----	3, 566, 124.41	-----	2 1, 989.03	486, 044.89	506, 436.99	2 525.00	16, 565.35	-----	486, 569.89	4, 054, 007.02
Utah: Strawberry Valley.....	-----	3, 491, 237.58	-----	12, 111.90	-----	-----	8, 393.52	44, 775.00	-----	2 8, 393.52	3, 458, 574.48
Washington: Okanogan.....	10, 335.16	1, 449, 548.64	1, 643.97	2 47, 706.87	-----	9, 746.79	2 100.32	5, 708.70	-----	12, 079.45	1, 405, 819.86
Yakima.....	1, 126, 738.53	13, 592, 195.02	-----	2 63, 957.96	2 45.02	77, 262.88	9, 838.53	317, 869.62	-----	1, 116, 854.98	13, 287, 630.32
Wyoming: Rivermont.....	600, 061.75	1, 679, 989.87	2 111.75	2 111.75	-----	-----	1, 895.29	6, 599.86	-----	598, 054.71	1, 673, 278.26
Shoshone.....	610, 474.34	8, 972, 088.36	-----	21, 398.67	-----	147.75	4, 388.07	77, 008.49	-----	606, 086.27	8, 916, 626.29
Total.....	8, 565, 849.74	152, 566, 385.32	51, 056.12	2, 284, 671.97	653, 167.16	1, 581, 330.60	73, 686.94	5, 246, 913.68	2, 357, 649.94	9, 197, 715.35	148, 827, 844.27

2 Contra.

6 During fiscal year \$1,304.27, "O. and M. added" was canceled, and sales were made amounting to \$25, both of which reduced the value of construction works abandoned

TABLE 5.—*Consolidated statement of contracted construction repayments*

State and project	Contracted repayments	
	Fiscal year 1924	To June 30, 1924
Arizona: Salt River		\$10,166,021.97
Arizona-California: Yuma	\$299,178.50	5,941,647.78
California: Orland		1,119,572.75
Colorado:		
Grand Valley		1,000,000.00
Uncompahgre		6,713,584.50
Idaho:		
American Falls	4,562,782.00	4,562,782.00
Boise	1,830,250.15	14,478,686.71
King Hill		2,000,000.00
Minidoka	¹ 248,294.40	6,034,519.63
Kansas: Garden City	¹ 51,176.11	
Montana:		
Huntley	¹ 6,126.10	1,314,490.15
Sun River	¹ 13,176.00	409,951.04
Montana-North Dakota: Lower Yellowstone		3,614,301.81
Nebraska-Wyoming: North Platte	1,063,327.50	9,999,950.53
Nevada: Newlands	¹ 49,829.00	2,588,450.01
New Mexico: Carlsbad		1,423,892.75
New Mexico-Texas: Rio Grande		7,650,000.00
North Dakota: Williston	198,471.56	489,275.30
Oregon: Umatilla	695,000.00	3,400,073.97
Oregon-California: Klamath	799,098.21	3,965,357.60
South Dakota: Belle Fourche	1,747,999.03	4,345,277.42
Utah: Strawberry Valley	7,156.33	3,091,255.70
Washington:		
Okanogan	¹ 739.00	1,497,840.29
Yakima	19,116.21	9,668,288.45
Wyoming: Shoshone	312,035.73	5,902,575.16
Total	11,165,272.21	⁴ 111,377,795.52

¹ Contra.² \$318,750 transferred to American Falls. Actual increase for year, \$70,455.60.³ Transferred to miscellaneous revenues.⁴ Contributed funds amounting to \$1,040,492.54 included in contracted repayments in fiscal year 1923 report are omitted in this table.TABLE 6.—*Consolidated statement by projects, of operation and maintenance cost, operation and maintenance returns and other credits, and results, calendar year 1923*

State and project	Cost	Operation and maintenance returns				Other credits, amount to be repaid with construction	Results, excess, ¹ and deficit
		Charges contracted	Penalties	Dis-counts (contra)	Miscellaneous revenues		
Arizona - California:							
Yuma	\$352,764.62	\$275,120.26	\$17,357.48	\$4,729.91	\$30,904.00		\$34,112.79
California: Orland	33,081.27	34,773.66	6.27	1,708.62	118.15		¹ 108.19
Colorado: Uncompahgre	140,494.37	158,395.50		3,181.62	780.31		¹ 15,499.82
Idaho:							
Boise ²	344,182.32	384,736.18	20,219.58	6,208.24	13,759.28		¹ 68,324.48
Minidoka	122,900.00	137,375.91	6,026.86	2,604.04	5,358.44		¹ 23,221.17
Montana:							
Huntley	36,945.12	41,344.83	3,517.29	1,080.14	890.36		¹ 7,727.22
Sun River	11,469.94	10,136.61	809.90	269.87	189.24		604.06
Montana-North Dakota: Lower Yellowstone	49,868.35	49,386.03			482.32		
Nebraska-Wyoming:							
North Platte	202,540.07	170,443.37	1,800.27	1,091.54	1,734.75		29,653.22
Nevada: Newlands	109,358.66	107,589.62	4,544.75	4,475.10	909.27		790.12
New Mexico: Carlsbad	38,744.00	54,505.14	6,653.82	1,398.27	526.18		¹ 21,542.87
New Mexico-Texas: Rio Grande	193,523.53	198,345.34	³ 2,864.84		345.64		¹ 2,302.61
North Dakota: Williston	75,500.92	³ 135,572.16			45,699.97	\$168,471.56	¹ 3,098.45
Oregon: Umatilla	37,600.67	36,688.44	³ 1,162.23	8.87	1,285.11		798.22
Oregon - California: Klamath	58,540.37	58,875.53	72.44	93.22	957.08		¹ 1,271.46
South Dakota: Belle Fourche	63,279.27	³ 307,450.83	16,458.44	³ 2,885.86	2,090.54	486,044.89	¹ 136,749.63
Utah: Strawberry Valley	21,428.79	94,128.43	1,230.06	1,284.86	336.27		¹ 72,981.11
Washington:							
Okanogan	45,558.98	53,551.25	1,733.52		888.68		¹ 10,614.47
Yakima	272,790.30	264,914.02	6,762.09	2,771.53	6,833.84	738.02	¹ 3,686.14
Wyoming: Shoshone	57,371.90	61,641.89	2,105.16	326.41	871.29		¹ 6,920.03
Total	2,267,943.45	1,748,929.02	85,270.86	28,382.38	114,960.72	655,254.47	¹ 308,089.24

¹ Excess of contracted returns over net cost.² Includes drainage.³ Contra.⁴ Contracted charges reduced by terms of contracts with irrigation districts.

TABLE 7.—Consolidated statement by projects of operation and maintenance cost, operation and maintenance returns and other credits, and results, to December 31, 1923

State and project	Cost	Operation and maintenance returns				Other credits		Results: Excess ¹ and deficit
		Charges contracted	Penalties	Discounts (contra)	Miscellaneous revenues	Deficits written off	Amount to be repaid with construction	
Arizona-California: Yuma.....	\$2,005,133.76	\$1,389,622.71	\$32,312.93	\$13,846.32	\$167,379.31	-----	\$26.32	\$429,638.81
California: Orland.....	234,558.75	245,705.73	39.97	12,107.45	1,534.99	-----	-----	1,614.49
Colorado: Uncompahgre.....	140,494.37	188,395.50	-----	3,181.62	780.31	-----	-----	115,499.82
Idaho: Boise ?	1,924,439.67	2,154,701.33	37,022.52	46,856.17	113,970.26	-----	-----	1,334,398.27
Minnesota: Minidoka.....	1,545,681.68	1,501,983.23	24,764.43	19,220.60	98,528.05	-----	12,313.86	172,687.29
Montana: Huntley.....	875,466.85	465,643.42	8,633.83	7,670.49	8,492.86	-----	1,214.64	399,152.59
Sun River.....	208,350.45	173,438.66	2,563.59	3,007.33	2,313.83	-----	2,518.90	30,522.80
Montana-North Dakota: Lower Yellowstone.....	900,702.19	253,560.56	2.59	4.63	124,643.62	-----	522,500.05	-----
Nebraska-Wyoming: North Platte.....	1,914,408.17	1,936,678.35	26,151.95	32,391.26	21,735.36	-----	82,413.95	1120,180.18
Nevada: Newlands.....	1,097,887.70	1,011,535.14	12,970.38	17,844.38	18,867.97	-----	2,022.63	70,335.66
New Mexico: Carlsbad.....	514,171.30	502,241.38	16,565.61	7,315.48	12,711.08	-----	1,934.00	111,965.29
New Mexico-Texas: Rio Grande.....	641,123.57	643,927.05	1,682.96	4,486.44	645.64	-----	-----	1,645.64
North Dakota: Bismarck-Trenton.....	74,781.07	2,317.41	-----	-----	10.00	\$71,149.39	1,304.27	-----
Williston.....	765,537.70	26,677.75	1,918.76	-----	392,900.88	178,667.20	168,471.56	13,098.45
Oregon: Umatilla.....	588,429.80	368,206.39	6,347.57	3,286.43	36,509.09	-----	190,627.95	19,975.27
Oregon-California: Klamath.....	618,608.28	618,032.45	2,730.07	4,513.42	12,404.01	-----	3,712.03	113,756.86
South Dakota: Belle Fourche.....	1,014,749.94	563,721.89	31,955.32	9,241.55	10,691.20	-----	506,436.99	188,813.91
Utah: Strawberry Valley.....	373,277.38	371,265.62	3,472.21	9,279.89	10,682.82	-----	-----	12,863.38
Washington: Okanogan.....	387,565.26	311,892.49	7,447.37	359.03	67,553.38	-----	9,746.79	18,715.74
Yakima.....	2,534,236.68	2,396,564.41	37,804.25	28,714.21	88,216.92	-----	77,307.90	136,942.59
Wyoming: Shoshone.....	657,668.10	671,149.56	9,545.72	10,112.15	14,662.31	-----	147.75	127,725.09
Total.....	19,017,272.17	15,767,261.03	263,932.03	233,438.85	1,205,233.89	249,816.59	1,582,699.89	181,767.59

¹ Excess of contracted returns over net cost.² Includes drainage.

TABLE 8.—Consolidated statement by projects of operation and maintenance cost, operation and maintenance returns and other credits, and results, fiscal year 1924

State and project	Cost	Operation and maintenance returns					Other credits		Results: Excess ¹ and deficit
		Charges contracted	Penalties	Discounts (contra)	Miscellaneous revenues	Deficits written off	Amount to be repaid with construction		
Arizona-California: Yuma	\$397,259.80	\$347,270.34	\$19,826.33	\$6,156.49	2 \$45,631.13			\$81,950.75	
California: Orland	30,389.81	34,773.66	27.95	1,709.27	28.05			12,730.58	
Colorado: Uncompahgre	138,695.51	157,841.45	179.25	3,312.02	2,697.38			118,710.55	
Idaho:									
Boise ³	399,594.94	393,335.01	20,600.35	3,695.28	14,721.92			125,367.06	
Minidoka	126,788.79	141,265.25	4,767.71	1,843.13	3,534.81			120,935.85	
Montana:									
Huntley	32,349.03	40,142.83	3,397.09	855.27	948.48			111,284.10	
Sun River	10,833.94	9,786.56	940.34	180.98	192.12			95.90	
Montana-North Dakota: Lower Yellowstone	64,239.86	54,143.35			2 1,196.72			11,293.23	
Nebraska-Wyoming: North Platte	214,226.54	185,101.11	1,490.32	933.53	2,240.18			26,328.46	
Nevada: Newlands	118,875.05	110,824.76	4,156.67	2,106.60	856.77			5,143.45	
New Mexico: Carlsbad	42,529.45	54,505.14	7,100.50	1,619.33	2,014.42			119,471.28	
New Mexico-Texas: Rio Grande	216,825.18	194,783.41	2 78.62		45.64			22,074.75	
North Dakota:									
Buford-Trenton						1,304.27	2 1,304.27		
Williston	70,374.74	2 131,672.07			45,407.34		168,471.56	111,832.09	
Oregon: Umatilla	39,968.05	36,688.44	23.84	7.74	1,688.30			1,575.21	
Oregon-California: Klamath	64,086.84	56,475.22	77.61	72.00	3,367.68			7,238.33	
South Dakota: Belle Fourche	64,186.91	307,141.38	16,739.16	2 3,069.32	2,422.92		486,044.89	136,948.00	
Utah: Strawberry Valley	22,770.51	18,432.60	1,129.59	1,218.76	608.36			3,818.72	
Washington:									
Okanogan	47,410.98	52,884.75	2,633.50		1,006.62			19,113.89	
Yakima	283,537.84	260,721.36	3,768.63	3,523.01	6,561.41		2 45.02	16,094.47	
Wyoming: Shoshone	54,532.76	62,184.83	1,315.77	478.09	5,955.63			114,415.38	
Total	2,439,476.53	1,772,346.62	88,095.99	24,642.18	44,470.18	1,304.27	653,167.16	195,265.51	

¹ Excess of contracted returns over net cost.² Contra.³ Includes drainage.⁴ Contracted charges reduced by terms of contracts with irrigation districts.

TABLE 9.—Consolidated statement by projects of operation and maintenance cost, operation and maintenance returns, and other credits and results, to June 30, 1924

State and project	Cost	Operation and maintenance returns				Other credits		Results: Excess ² and deficit
		Charges contracted ¹	Penalties	Discounts (contra)	Miscellaneous revenues	Deficits written off	Amount to be repaid with construction	
Arizona-California: Yuma.....	\$2,220,604.76	\$1,467,550.72	\$45,018.64	\$19,459.39	\$107,950.77	-----	\$26.32	\$619,517.70
California: Orland.....	250,119.10	245,705.73	65.72	12,108.94	1,537.49	-----	-----	14,919.10
Colorado: Uncompagre.....	219,737.17	157,841.45	179.25	3,312.02	3,261.85	-----	-----	61,766.64
Idaho:								
Boise ³	2,137,248.27	2,234,653.13	51,753.31	48,389.43	115,559.28	-----	-----	² 216,928.02
Minidoka.....	1,603,178.06	1,540,318.75	27,056.72	19,287.53	98,528.05	-----	12,313.86	² 55,751.79
Montana:								
Huntley.....	891,018.73	464,305.45	10,212.35	7,758.79	9,006.21	-----	1,214.04	414,038.87
Sun River.....	214,728.67	172,701.86	2,976.92	3,030.76	2,316.71	-----	2,513.90	37,245.04
Montana-North Dakota: Lower Yellowstone.....	934,170.59	253,560.56	2.59	32,461.83	124,651.77	-----	522,500.05	33,460.25
Nebraska-Wyoming: North Platte.....	2,011,150.28	1,977,730.49	26,702.70	32,361.83	23,210.84	-----	82,413.95	² 66,345.87
Nevada: Newlands.....	1,183,380.30	1,011,324.02	15,445.64	17,893.37	19,125.97	-----	2,022.93	153,355.11
New Mexico: Carlsbad.....	538,537.21	502,241.88	21,315.07	7,749.23	14,297.62	-----	1,934.00	6,498.37
New Mexico-Texas: Rio Grande.....	765,791.30	645,368.91	1,426.46	4,486.44	645.64	-----	-----	122,836.73
North Dakota:								
Buford-Trenton.....	74,781.07	2,317.41	-----	-----	10.00	\$72,453.66	-----	-----
Williston.....	797,309.24	26,677.75	1,918.76	-----	415,097.84	178,667.20	168,471.56	6,476.13
Oregon-Umatilla.....	610,023.63	368,206.39	6,371.41	3,294.17	37,626.56	-----	190,627.95	10,484.89
Oregon-California: Klamath.....	657,791.30	615,632.14	2,769.51	4,537.65	11,803.96	-----	3,712.03	28,411.31
South Dakota: Belle Fourche.....	1,044,205.89	563,721.89	32,385.37	9,241.55	11,467.83	-----	506,436.99	² 60,594.94
Utah: Strawberry Valley.....	386,538.40	370,180.62	3,913.84	9,572.55	11,121.60	-----	-----	9,890.19
Washington:								
Okanogan.....	411,863.92	311,225.99	8,826.10	359.03	68,079.43	-----	9,746.79	14,344.64
Yakima.....	2,660,876.86	2,465,487.24	38,461.57	31,548.29	92,583.91	-----	77,262.88	18,629.55
Wyoming: Shoshone.....	685,107.26	670,297.76	10,178.31	10,343.65	20,182.22	-----	147.75	² 5,355.13
Total.....	20,297,161.41	16,067,049.64	306,985.44	244,939.55	1,188,065.65	251,120.86	1,581,350.60	1,147,528.77

¹ Includes charges to December 31, 1923 only.² Excess of contracted returns over net cost.³ Includes drainage.

TABLE 10.—Construction repayments (including funds advanced for construction)

State and project	Due		Collected			Uncollected June 30, 1924
	Fiscal year 1924	To June 30, 1924	Cash		Other credits to June 30, 1924 ¹	
			Fiscal year 1924	To June 30, 1924		
Arizona: Salt River-----	\$809,961.32	\$1,696,922.64	\$809,961.32	\$1,696,922.64		
Arizona-California: Yuma-----	417,502.13	1,572,641.35	311,415.35	1,391,965.76	\$3,164.89	\$177,510.70
California: Orland-----	69,600.48	304,829.90	68,374.37	303,603.79		1,226.11
Colorado: Uncompahgre-----	118,237.07	264,498.37	24,915.91	54,014.79	34,832.44	175,651.14
Idaho:						
American Falls-----	33,607.00	33,607.00	33,607.00	33,607.00		
Boise-----	670,728.53	2,408,552.66	233,945.35	1,608,122.87	25,092.00	775,337.79
King Hill-----	² 127,416.97					
Minidoka-----	³ 220,448.22	3,182,410.80	³ 145,605.52	2,645,481.63	154,423.24	382,505.93
Kansas: Garden City-----	² ⁴ 51,176.11		² 51,176.11			
Montana:						
Huntley-----	25,002.8	417,647.85	17,539.50	377,384.86	502.21	39,760.78
Sun River-----	6,495.62	166,852.80	7,746.60	148,646.96	213.63	17,992.21
Montana-North Dakota:	0					
Lower Yellowstone-----	28,287.38	69,422.48	6,741.12	47,876.22		21,546.26
Nebraska-Wyoming: North Platte-----	413,647.71	2,826,095.62	69,166.48	1,777,040.01	34,958.86	1,014,696.75
Nevada: Newlands-----	46,821.92	592,191.97	30,386.45	545,162.11	6,788.90	40,240.96
New Mexico: Carlsbad-----	57,538.92	483,415.25	69,700.37	460,148.16		23,267.09
New Mexico-Texas: Rio Grande-----	198,514.80	275,014.80	198,523.80	275,014.80		
Oregon: Umatilla-----	77,150.17	483,782.68	25,809.24	382,408.62		101,374.06
Oregon-California: Klamath-----	54,597.45	622,409.03	52,885.68	590,155.69		32,253.34
South Dakota: Belle Fourche-----	² ⁵ 289,336.90	459,866.70	² ⁵ 51,914.23	425,758.16	266.57	33,841.97
Utah: Strawberry Valley-----	133,553.90	609,899.37	83,399.85	479,796.61		130,102.76
Washington:						
Okanogan-----	10,849.35	67,044.08	9,456.77	63,738.15		3,305.93
Yakima-----	344,498.03	3,693,534.78	357,247.36	3,496,714.99	28,715.95	168,103.84
Wyoming: Shoshone-----	112,579.30	914,782.66	14,743.89	625,641.94	1,835.85	287,304.87
Paid in advance of due dates-----	3,381,692.12	21,145,422.79	2,468,081.59	17,429,205.76	290,794.54	3,425,422.49
Refunds-----			⁶ 226,489.92	533,606.01	⁷ 40,978.73	
			⁶ 20,951.99	20,951.99		
Total-----			2,715,523.50	17,983,763.76	331,773.27	

¹ Other credits for fiscal year 1924, \$25,410.50. For details see project statements.² Contra.³ \$33,607 transferred to American Falls. Actual accruals, \$254,055.22; actual collections, \$179,212.52.⁴ Transferred to miscellaneous.⁵ Account adjusted due to formation of Belle Fourche irrigation district. Actual accruals for the year, \$62,755.02; actual collections, \$2,660.24.⁶ Prior year transactions, \$17,951.08.⁷ Other credits to end of prior years, \$59,218.18. Applied to uncollected during fiscal year, \$18,239.45.

TABLE 11.—Operation and maintenance repayments (public notice)

State and project	Due		Collected			Uncollected June 30, 1924
	Fiscal year 1924	To June 30, 1924	Cash		Other credits to June 30, 1924	
			Fiscal year 1924	To June 30, 1924		
Arizona-California: Yuma-----	\$345,350.95	\$1,465,631.33	\$366,958.53	\$1,290,664.25	\$23,577.92	\$151,389.16
California: Orland-----	34,773.66	245,705.73	33,100.12	233,413.90	12,108.94	182.89
Colorado: Uncompahgre-----	157,841.45	157,841.45	82,923.36	82,923.36	5,628.57	69,289.52
Idaho:						
Boise-----	255,078.36	1,754,317.86	156,062.60	1,362,823.89	44,095.41	347,398.56
Boise (drainage)-----	138,256.65	480,335.27	119,421.64	305,758.51	4,294.02	170,282.74
Minidoka-----	143,042.74	1,502,585.02	125,145.52	1,239,736.82	69,914.67	192,933.53
Montana:						
Huntley-----	30,376.57	454,538.19	37,895.86	351,811.31	8,501.98	94,225.90
Sun River-----	¹ 4,068.53	158,846.77	9,258.42	131,877.03	3,245.55	23,724.19
Montana-North Dakota:						
Lower Yellowstone-----	49,722.45	243,825.25	^{1 2} 11,422.80	50,936.48	4.63	192,884.14
Nebraska-Wyoming: North Platte-----	185,101.11	1,977,730.49	52,188.90	1,365,211.57	42,414.25	570,104.67
Nevada: Newlands-----	108,690.33	913,689.59	87,666.85	776,648.80	28,277.55	108,763.24
New Mexico: Carlsbad-----	54,505.14	502,241.38	78,758.73	470,139.33	7,749.23	24,352.82
New Mexico-Texas: Rio Grande-----	208,234.00	597,312.40	201,102.44	585,694.40	4,486.44	7,131.56
North Dakota:						
Buford-Trenton-----		2,317.41		2,317.41		
Williston-----	¹ 45,242.55	26,677.75		26,677.75		
Oregon: Umatilla-----	42,522.54	322,383.73	38,955.57	283,869.55	3,294.17	35,220.01
Oregon-California: Klamath-----	56,062.97	548,969.89	77,797.19	489,228.65	30,131.60	29,609.64
South Dakota: Belle Fourche-----	³ 345,290.44	525,572.83	¹ 52,919.53	460,570.52	9,376.82	55,625.49
Utah: Strawberry Valley-----	42,086.27	319,223.46	31,578.51	272,564.78	9,572.85	37,085.83
Washington:						
Okanogan-----	62,555.97	283,523.50	49,774.14	264,408.47	2,614.61	16,500.42
Yakima-----	260,721.36	2,465,487.24	230,478.53	2,288,257.55	32,593.63	144,636.06
Wyoming: Shoshone-----	62,184.83	670,297.76	16,330.66	421,391.31	18,597.12	230,309.33
Total-----	1,842,505.88	15,619,055.30	1,731,055.24	12,756,925.64	⁴ 360,479.96	2,501,649.70
Paid in advance of due dates-----			41,269.43	60,457.85	⁵ 806.06	
Penalties and interest-----			70,878.85	286,032.75	⁶ 19,062.44	1,950.25
Refunds-----			⁷ 12,750.02	12,750.02		
Total cash collections-----			1,855,953.54	13,116,166.26		

¹ Contra.² \$25,066.72 transferred to miscellaneous collections. Actual collections for year, \$13,643.92.³ Accounts adjusted owing to formation of Belle Fourche irrigation district. Actual accruals for year, \$89,573.46; actual collections, \$943.45.⁴ Other credits for fiscal year 1924, \$33,449.95. For details see project statements.⁵ Other credits for fiscal year 1924, \$742.88. For details see project statements.⁶ Other credits for fiscal year 1924, \$15,266.89. For details see project statements.⁷ Prior year transactions except \$823.58.

TABLE 12.—*Rentals of irrigation water*

State and project	Due		Collected			Uncollected June 30, 1924
	Fiscal year 1924	To June 30, 1924	Cash		Other credits to June 30, 1924 ¹	
			Fiscal year 1924	To June 30, 1924		
Arizona: Salt River.....		\$2, 246, 726. 01		\$2, 246, 726. 01		
Arizona-California: Yuma.....	² \$51, 694. 11	444, 298. 73	² \$50, 649. 48	440, 199. 29	\$292. 01	\$3, 807. 43
California: Orland.....		120, 384. 00		120, 384. 00		
Colorado:						
Grand Valley.....	55, 649. 75	275, 479. 09	60, 026. 58	244, 528. 71	4, 000. 14	26, 950. 24
Uncompahgre.....	6, 338. 05	1, 189, 114. 15	17, 677. 04	1, 154, 265. 56	12, 090. 44	22, 758. 15
Idaho:						
Boise.....	14, 278. 57	754, 293. 75	8, 840. 40	731, 007. 61	4, 720. 50	18, 565. 64
King Hill.....	36, 138. 21	88, 368. 94	1, 146. 46	50, 515. 83		37, 853. 11
Minidoka.....	1, 219. 97	272, 023. 33	1, 355. 90	268, 657. 43	3, 234. 23	131. 67
Montana:						
Huntley.....	896. 37	7, 236. 73	638. 20	6, 770. 64		466. 09
Milk River.....	15, 953. 38	192, 059. 66	20, 013. 37	172, 161. 63	1, 015. 68	18, 882. 35
Sun River.....	4, 309. 29	52, 554. 17	4, 750. 93	25, 872. 23	539. 74	26, 142. 20
Montana-North Dakota:						
Lower Yellowstone.....	322. 31	123, 587. 99	199. 08	122, 068. 26		1, 519. 73
Nebraska-Wyoming: North Platte.....	53, 741. 65	222, 583. 37	40, 340. 83	208, 596. 44	10. 00	13, 976. 93
Nevada: Newlands.....	2, 425. 05	19, 361. 27	642. 20	17, 558. 92	1, 761. 85	40. 50
New Mexico:						
Carlsbad.....	2, 691. 32	21, 933. 01	2, 691. 32	21, 933. 01		
Hondo.....		9, 165. 19		9, 129. 70		35. 49
New Mexico-Texas: Rio Grande.....	8, 927. 68	1, 118, 403. 12	5, 369. 05	1, 080, 816. 31		37, 586. 81
North Dakota:						
Buford-Trenton.....		31. 75		31. 75		
Williston.....		2, 117. 28		2, 117. 28		
Oregon: Umatilla.....	1, 207. 80	33, 308. 04	1, 207. 80	33, 308. 04		
Oregon-California: Klamath.....	967. 68	43, 981. 31	1, 254. 66	43, 792. 43		188. 88
South Dakota: Belle Fourche.....	304. 72	5, 364. 82	286. 92	5, 197. 02	17. 80	150. 60
Utah: Strawberry Valley.....	175. 25	8, 563. 64	175. 25	8, 563. 64		
Washington:						
Okanogan.....	² 1, 206. 37	109, 244. 48		106, 222. 69	2, 584. 19	437. 60
Yakima.....	3, 296. 76	143, 885. 72	2, 771. 31	142, 745. 44		1, 140. 28
Wyoming:						
Riverton.....	111. 75	111. 75	111. 75	111. 75		
Shoshone.....	5, 282. 47	17, 648. 52	5, 394. 57	17, 508. 47		140. 05
Total.....	161, 337. 55	7, 521, 829. 82	124, 244. 08	7, 280, 790. 09	30, 266. 58	210, 773. 15

¹ Other credits for fiscal year 1924, \$6,457.55. For details see project statements.² Contra.TABLE 13.—*Rentals of power and light*

State and project	Due		Collected			Uncollected June 30, 1924
	Fiscal year 1924	To June 30, 1924	Cash		Other credits to June 30, 1924	
			Fiscal year 1924	To June 30, 1924		
Arizona: Salt River.....		\$998,411.03		\$998,411.03		
Idaho:						
Boise.....	\$10,890.11	128,169.91		96,424.61	\$31,745.30	
Minidoka.....	107,275.49	799,046.79	\$107,047.69	770,820.27	4,818.42	\$23,408.10
Nebraska-Wyoming: North						
Platte.....	30,255.10	113,864.58	29,187.79	97,260.43	14,255.59	2,348.56
Nevada: Newlands.....	18,476.81	202,837.37	18,646.66	176,159.07	25,505.75	1,172.55
New Mexico - Texas: Rio						
Grande.....		2,243.33		2,243.33		
North Dakota: Williston	44,288.70	409,936.20	44,547.00	406,680.00		3,256.20
Oregon-California: Klamath ¹	² 537.65	7,697.18	² 537.65	7,697.18		
Utah: Strawberry Valley	24,460.76	151,509.65	24,751.30	149,961.72		1,547.93
Washington:						
Okanogan.....		1,754.71		1,754.71		
Yakima.....		3,635.33		3,635.33		
Wyoming: Shoshone.....	8,114.63	14,637.34	7,944.24	13,969.44		667.90
Total.....	243,223.95	2,833,743.42	231,587.03	2,725,017.12	³ 76,325.06	32,401.24

¹ For explanation of reduction see project data. ² Contra. ³ Other credits for fiscal year, \$12,776.74.

TABLE 14.—*Rentals of grazing and farming lands*

State and project	Due		Collected			Uncollected June 30, 1924
	Fiscal year 1924	To June 30, 1924	Cash		Other credits to June 30, 1924	
			Fiscal year 1924	To June 30, 1924		
Arizona: Salt River		\$19,373.14		\$19,373.14		
Arizona-California: Yuma	\$2,000.92	13,857.02	\$2,032.92	13,703.85		\$153.17
California: Orland	47.50	79.50	47.50	79.50		
Colorado:						
Grand Valley	50.00	279.00	50.00	217.00		62.00
Uncompahgre	45.45	197.45	45.45	197.45		
Idaho:						
Boise	520.41	20,668.20	520.41	20,579.50		88.70
Minidoka	749.29	34,372.16	840.42	30,207.93		4,164.23
Montana:						
Huntley	478.56	12,674.22	583.14	12,243.13		431.09
Milk River	3,774.63	30,914.34	3,758.20	30,490.69	\$38.88	384.77
Sun River	2,792.02	34,124.83	4,088.96	30,814.10		3,310.73
Montana - North Dakota:						
Lower Yellowstone	134.33	3,108.95	140.33	3,003.95		105.00
Nebraska-Wyoming: North Platte	2,393.16	83,070.08	3,121.52	77,556.38		5,513.70
Nevada: Newlands	5,041.78	29,626.40	3,571.28	27,709.90		1,916.50
New Mexico: Carlsbad	1,470.31	13,166.24	1,470.31	12,631.80		534.44
New Mexico-Texas: Rio Grande	151.50	1,951.70	166.50	1,951.70		
North Dakota:						
Buford-Trenton		423.93		423.93		
Williston		249.98		219.93		
Oregon: Umatilla	522.05	2,101.55	522.05	2,051.55		50.00
Oregon-California: Klamath	18,358.99	176,765.15	18,182.99	176,145.15	84.00	536.00
South Dakota: Belle Fourche	323.17	641.94	319.17	637.94		4.00
Utah: Strawberry Valley	15,499.20	151,280.36	15,499.20	151,280.36		
Washington:						
Okanogan	50.00	772.50	50.00	772.50		
Yakima	1,781.46	23,061.50	1,617.56	22,652.30		409.20
Wyoming: Shoshone	1,121.27	9,589.61	1,272.27	9,379.61		210.00
Secondary projects	9,004.82	163,026.99	9,472.58	119,538.35	42,497.67	990.97
Total	66,310.82	825,376.74	67,372.76	763,891.69	142,620.55	18,864.50

¹ Other credits for fiscal year, \$102.

TABLE 15.—*Statement of miscellaneous balances due and unpaid (not including construction and operation and maintenance repayments, water rentals, rentals of power and light, and grazing and farm land rentals)*

State and project	Amount	State and project	Amount
Arizona-California: Yuma	\$1,558.03	New Mexico-Texas: Rio Grande	\$13,829.12
Colorado:		North Dakota: Williston	7.55
Grand Valley	330.75	Oregon: Umatilla	627.77
Uncompahgre	149.68	Oregon-California: Klamath	5,054.31
Idaho:		South Dakota: Belle Fourche	4,311.90
American Falls	234.61	Utah: Strawberry Valley	87.13
Boise	2,555.88	Washington:	
King Hill	156.89	Okanogan	1,385.65
Minidoka	22.50	Yakima	1,043.11
Montana:		Wyoming:	
Huntley	63.25	Riverton	1,462.43
Milk River	1,841.97	Shoshone	39,192.94
Sun River	1,602.29	Secondary projects	33,051.51
Montana-North Dakota: Lower Yellowstone	7.70	Washington office	22,208.02
Nebraska-Wyoming: North Platte	9,250.49	Denver office	22,845.06
Nevada: Newlands	628.09	Field legal	4,060.30
New Mexico: Carlsbad	171.73	Total	167,740.66

TABLE 16.—*Voucher transactions, all funds, and net investment, as of June 30, 1924, reclamation fund projects*

State and project	Expenditures ¹		Collections ²		Net investment	
	Fiscal year 1924	To June 30, 1924	Fiscal year 1924	To June 30, 1924	Fiscal year 1924	To June 30, 1924
Arizona: Salt River		\$14, 671, 484. 24	\$839, 206. 87	\$5, 880, 699. 73	\$839, 206. 87	\$8, 790, 784. 51
Arizona-California:						
Yuma	\$453, 934. 35	12, 526, 016. 84	758, 885. 33	3, 788, 528. 90	304, 950. 98	8, 737, 487. 94
California: Orland	56, 616. 94	1, 535, 109. 74	104, 502. 12	704, 004. 72	47, 885. 18	831, 105. 02
Colorado:						
Grand Valley	386, 589. 76	4, 837, 743. 20	73, 356. 45	382, 459. 89	313, 233. 31	4, 455, 283. 31
Uncompahgre	132, 945. 33	8, 265, 504. 16	129, 137. 66	1, 527, 752. 38	3, 807. 67	6, 737, 751. 78
Idaho:						
Boise	1, 426, 502. 91	17, 411, 941. 33	611, 186. 99	4, 848, 318. 84	815, 315. 92	12, 563, 622. 49
King Hill	54, 711. 58	2, 043, 235. 47	9, 798. 55	113, 296. 81	44, 913. 03	1, 929, 938. 66
Minidoka	1, 107, 649. 29	8, 793, 041. 84	162, 174. 25	5, 287, 136. 06	1, 269, 823. 54	3, 505, 905. 78
American Falls Res- ervation	2, 102, 586. 00	2, 102, 586. 00	510, 833. 66	510, 833. 66	1, 591, 752. 34	1, 591, 752. 34
Kansas: Garden City		390, 495. 54		58, 002. 27		332, 493. 27
Montana:						
Huntley	30, 695. 86	2, 451, 575. 90	62, 038. 24	824, 909. 47	31, 342. 38	1, 626, 666. 43
Milk River	117, 737. 43	7, 339, 569. 45	37, 930. 07	383, 275. 10	79, 807. 36	6, 954, 294. 35
Sun River	191, 041. 00	4, 841, 053. 70	32, 280. 41	465, 916. 41	158, 760. 59	4, 375, 137. 29
Montana-North Dakota:						
Lower Yellowstone	88, 889. 31	4, 129, 107. 93	22, 558. 18	322, 083. 67	66, 331. 13	3, 807, 024. 26
Nebraska-Wyoming:						
North Platte	1, 866, 931. 98	18, 358, 735. 82	248, 889. 15	8, 931, 305. 09	1, 618, 042. 83	14, 427, 430. 73
Nevada: Newlands	389, 197. 61	8, 932, 851. 35	152, 254. 12	1, 761, 359. 32	236, 943. 49	7, 171, 492. 03
New Mexico:						
Carlsbad	40, 875. 28	1, 991, 625. 35	166, 343. 92	1, 055, 814. 87	125, 468. 64	935, 810. 48
Hondo		406, 744. 36		34, 841. 70		371, 902. 66
New Mexico-Texas: Rio Grande	1, 044, 519. 40	15, 654, 277. 02	436, 400. 92	2, 553, 592. 76	608, 118. 48	13, 100, 684. 26
North Dakota:						
Buford-Trenton		311, 229. 60	25. 00	17, 457. 93	25. 00	293, 771. 67
Williston	99, 116. 36	1, 310, 740. 55	45, 526. 59	457, 976. 62	53, 589. 77	852, 763. 93
Oregon: Umatilla	933, 226. 27	4, 339, 123. 27	86, 088. 18	910, 352. 79	847, 138. 09	3, 428, 770. 48
Oregon-California:						
Klamath	418, 858. 01	5, 296, 062. 66	167, 548. 40	1, 392, 048. 08	251, 309. 61	3, 904, 014. 58
South Dakota: Belle Fourche	59, 855. 03	4, 673, 434. 05	5, 987. 99	1, 084, 471. 75	53, 867. 04	3, 588, 962. 30
Utah: Strawberry Valley	40, 056. 15	4, 226, 796. 77	160, 238. 76	1, 288, 559. 51	120, 182. 61	2, 938, 237. 26
Washington:						
Okanogan	54, 667. 49	1, 883, 300. 74	64, 162. 74	488, 293. 31	9, 495. 25	1, 395, 007. 43
Yakima	1, 264, 099. 35	16, 761, 551. 14	656, 303. 86	6, 674, 865. 09	607, 795. 49	10, 086, 686. 05
Wyoming:						
Riverton	760, 243. 76	2, 091, 940. 77	6, 349. 45	33, 828. 47	753, 894. 31	2, 058, 112. 30
Shoshone	477, 040. 42	9, 962, 650. 39	55, 253. 35	1, 327, 018. 27	421, 787. 07	8, 635, 632. 12
Secondary (including Deschutes and Baker)	138, 133. 37	2, 133, 775. 75	38, 479. 42	613, 508. 06	99, 653. 95	1, 520, 267. 69
Denver office (net not transferred to projects) ³	45, 685. 26	247, 591. 47	38, 989. 24	165, 438. 65	6, 696. 02	82, 152. 82
Field legal (net not trans- ferred to projects) ³	2, 350. 38	13, 490. 61	3, 462. 28	6, 073. 17	1, 111. 90	7, 417. 44
Washington office (net not transferred to pro- jects) ³	37, 442. 26	395, 138. 80	31, 157. 91	318, 860. 82	6, 284. 35	76, 277. 98
Indian projects ³		2, 997, 829. 24		2, 997, 829. 24		
Civil service retirement fund (unabsorbed) ⁷	2, 532. 56	8, 534. 29			2, 532. 56	8, 534. 29
General investigations ⁸	5, 120. 16	5, 120. 16	25, 500. 00	25, 500. 00	20, 379. 84	20, 379. 84
Total	11, 614, 552. 28	193, 341, 009. 50	5, 742, 850. 06	52, 238, 213. 41	5, 871, 702. 22	141, 102, 796. 09

¹ Expenditures from reclamation fund, increase of compensation, judgments, Court of Claims, Rio Grande Dam appropriation and Wind River Indian (Riverton). Amounts given for each project include net transfers (transfers from other projects less transfers to other projects).

² Collections creditable to increase of compensation, Rio Grande Dam appropriation and Wind River, Indian (Riverton) are included in the expenditure column as contra.

³ Contra.

⁴ Investment for American Falls Reservoir project separated from Minidoka project investment in November, 1923.

⁵ See following analysis

⁶ Expended for Bureau of Indian Affairs from reclamation fund and later reimbursed by Congressional appropriation.

⁷ Analysis of civil service retirement fund:

Transferred from reclamation fund to civil service retirement fund \$96, 785. 00

Deducted from pay of employees 88, 250. 71

Unabsorbed balance 8, 534. 29

⁸ See explanation under "Financial data for expenditures from appropriation" General investigations, Reclamation Service, 1923, Dec. 31, 1924.

TABLE 16.—*Voucher transactions, all funds, and net investment, as of June 30, 1924, reclamation fund projects—Continued*

ANALYSIS OF EXPENDITURES AND INVESTMENTS BY FUNDS

Item	Expenditures		Collections		Net investment	
	Fiscal year 1924	To June 30, 1924	Fiscal year 1924	To June 30, 1924	Fiscal year 1924	To June 30, 1924
Reclamation fund.....	\$11,333,021.44	\$188,671,594.90	\$5,743,835.71	\$52,238,213.41	\$5,589,185.73	\$136,433,381.49
Increase of compensation (net) ²	282, 516. 49	2, 759, 890. 98	-----	-----	282, 516. 49	2, 759, 890. 98
Judgments, Court of Claims.....	-----	550, 347. 58	-----	-----	-----	550, 347. 58
Rio Grande Dam appropriation (net).....	-----	1, 000, 000. 00	-----	-----	-----	1, 000, 000. 00
Wind River Indian (Riverton) (net).....	³ 985. 65	359, 176. 04	³ 985. 65	-----	-----	359, 176. 04
Total.....	11, 614, 552. 28	193, 341, 009. 50	5, 742, 850. 06	52, 238, 213. 41	5, 871, 702. 22	141, 102, 796. 09

Item	Denver		Field legal		Washington	
	Fiscal year 1924	To June 30, 1924	Fiscal year 1924	To June 30, 1924	Fiscal year 1924	To June 30, 1924
Reclamation fund disbursements.....	\$207, 566. 41	\$1, 511, 609. 63	\$52, 973. 63	\$536, 480. 36	\$229, 092. 56	\$5, 191, 301. 16
Increase of compensation (net).....	³ 1, 245. 58	³ 1, 261. 00	17. 75	249. 81	7, 204. 87	1, 930. 87
Total.....	206, 320. 83	1, 510, 348. 63	52, 991. 38	536, 730. 17	236, 297. 43	5, 193, 232. 03
Less:						
Net transfers.....	160, 635. 57	1, 262, 757. 16	50, 641. 00	523, 239. 56	198, 855. 17	4, 798, 093. 23
Collections.....	38, 989. 24	165, 438. 65	3, 462. 28	6, 073. 17	31, 157. 91	318, 860. 82
Total.....	199, 624. 81	1, 428, 195. 81	54, 103. 28	529, 312. 73	230, 013. 08	5, 116, 954. 05
Net investment.....	6, 696. 02	82, 152. 82	³ 1, 111. 90	7, 417. 44	6, 284. 35	76, 277. 98

³ Contra.² Includes \$17,761.73 increase of compensation, Wind River Indian (Riverton).

NOTE.—Denver Washington and field legal offices' investment represents under or over distributed expenditures to projects analyzed as follows:

TABLE 17.—*Voucher transactions and net investment as of June 30, 1924, other than reclamation fund projects*

Item	Expenditures		Collections		Net investment	
	Fiscal year 1924	To June 30, 1924	Fiscal year 1924	To June 30, 1924	Fiscal year 1924	To June 30, 1924
Yuma auxiliary project fund.....	\$67, 637. 74	\$743, 226. 17	\$43, 391. 46	\$795, 516. 67	\$24, 246. 28	¹ \$52, 290. 50
Increase of compensation fund (net).....	1, 509. 90	15, 851. 45	-----	-----	1, 509. 90	15, 851. 45
Total.....	69, 147. 64	759, 077. 62	43, 391. 46	795, 516. 67	25, 756. 18	¹ 36, 439. 05
Drainage and cut-over fund.....	-----	100, 279. 59	-----	464. 51	-----	99, 815. 08
Increase of compensation fund (net).....	-----	728. 94	-----	-----	-----	728. 94
Total.....	-----	101, 008. 53	-----	464. 51	-----	100, 544. 02
General investigations, Reclamation Service, 1923-Dec. 31, 1924, fund.....	185, 782. 14	202, 190. 38	19, 177. 55	19, 177. 55	166, 604. 59	183, 012. 83
Increase of compensation fund (net).....	4, 284. 29	4, 589. 10	-----	-----	4, 284. 29	4, 589. 10
Total.....	190, 066. 43	206, 779. 48	19, 177. 55	19, 177. 55	170, 888. 88	187, 601. 93

¹ Contra.

TABLE 18.—Appropriations by projects for the fiscal year 1924 showing increases and decreases authorized, liabilities and expenditures and balances (to lapse) unencumbered

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State	Project	Appropriation act	10 per cent increases and decreases	Contributed funds not spent previous years	Increase of compensation (net)	Miscellaneous collections and transfers	Total authorized	Expenditures	Balance unexpended	Liabilities	Balance unencumbered (to lapse) ¹
Arizona	Salt River	\$5,000.00			\$13,918.50	\$151,096.98	\$5,000.00	\$412,009.26	\$5,000.00	\$51,000.50	\$5,000.00
Arizona-California	Yuma	430,000.00			3,101.32	3,073.77	595,015.48	183,000.22	183,000.22	2,168.40	132,005.72
California	Orland Valley	50,000.00	\$5,000.00		6,087.63	73,710.34	61,175.09	48,505.00	162,266.39	29,396.52	10,501.69
Colorado	Grand Valley	395,000.00			2 18,500.00	2 18,500.00	474,797.97	312,531.58	70,446.16	7,961.82	132,869.87
Do	Uncompahgre	135,500.00			14,186.28	20,305.19	198,341.47	123,895.31	73,446.16	301,343.57	462,484.34
Idaho	American Falls	485,000.00			14,186.28	608,690.09	1,038,370.59	294,666.63	763,703.96	45,066.16	402,360.36
Do	Boise	1,390,000.00			26,795.79	104,997.57	1,521,703.36	1,081,926.08	439,837.28	45,066.16	394,771.12
Do	King Hill	35,000.00			2,306.73	15,425.92	52,732.65	44,518.99	8,213.66	33,142.81	7,807.49
Do	Minidoka	229,500.00			1,599.25	231,069.25	191,680.00	191,680.00	39,389.25	3,516.18	6,246.44
Montana	Huntley	115,000.00			1,514.85	4,391.89	109,408.74	27,816.20	81,590.54	3,516.18	78,074.36
Do	Milk River	140,000.00	\$11,500.00		6,332.88	49,257.80	195,590.68	106,148.82	89,441.86	5,866.69	84,075.17
Do	Sun River	145,000.00			4,647.58	32,742.31	182,389.89	111,624.36	70,765.53	7,351.34	63,414.19
Montana-North Dakota	Lower Yellowstone	125,000.00	\$12,000.00		2,584.31	9,978.72	120,563.03	61,779.69	58,783.34	5,791.15	52,992.19
Dakota	stone	1,420,000.00	142,000.00		28,031.97	142,209.00	1,732,331.06	1,422,734.47	309,596.59	303,184.89	6,411.70
Nebraska-Wyoming	Newlands	735,000.00	\$73,500.00		9,382.08	30,047.44	700,630.12	312,695.32	388,234.80	36,500.54	351,734.26
Nevada	Carlsbad	80,000.00	\$8,000.00		2,807.98	11,539.86	86,347.84	40,365.23	45,982.61	1,131.84	44,850.77
New Mexico	Rio Grande	900,000.00	51,000.00		35,871.71	53,606.36	1,042,078.07	908,670.90	133,807.17	92,124.07	41,683.10
New Mexico-Texas	Williston	100,000.00			2,553.14	46,054.26	148,607.40	94,376.91	54,230.49	3,292.21	48,938.28
North Dakota	Umatilla	900,000.00	70,000.00		9,960.14	26,857.29	1,005,827.43	736,528.86	269,298.57	199,382.43	169,916.14
Oregon	Klamath	700,000.00			8,866.66	26,875.92	735,742.58	345,528.83	300,213.75	246,332.66	143,281.09
Oregon-California	Belle Fourche	95,000.00	\$9,500.00		3,540.92	3,260.09	92,301.01	51,313.04	40,987.97	5,890.33	35,057.64
South Dakota	Strawberry Valley	45,000.00			3,097.87	44,760.18	42,858.05	37,920.23	54,937.82	1,425.33	53,512.49
Utah	Okanogan	65,000.00			2,604.60	2,203.96	69,814.56	51,364.69	18,449.87	5,429.31	13,020.56
Washington	Yakima	1,310,000.00	\$102,500.00		28,557.80	76,931.38	1,312,989.18	1,001,432.31	251,556.84	205,159.94	46,396.90
Do	Riverton	600,000.00	60,000.00		9,894.08	9,159.48	670,053.56	621,353.86	57,700.20	54,944.07	2,756.13
Wyoming	Shoshone	925,000.00	\$92,500.00		14,465.01	49,475.74	896,440.75	399,285.77	497,154.98	48,328.44	448,826.54
Do	Secondary:										
	Baker	500,000.00			83.42	310.90	500,394.32	4,459.28	495,935.04	-----	495,935.04
	Others	200,000.00			5,941.41	64,819.40	292,473.22	128,628.57	163,844.65	4,943.82	158,900.83
		12,250,000.00			21,712.41	1,664,837.93	14,194,805.35	9,033,759.72	5,161,045.63	1,703,221.19	3,457,824.44

¹ Except Baker, all of which is carried over to fiscal year 1925, and American Falls which carries forward \$375,000 (contributed funds). Cash on hand with United States Treasurer and special fiscal agents \$5,471,950.33, Table No. 1.

² Contra.

SALT RIVER PROJECT, ARIZONA

Appropriations:			
Fiscal year 1924, amount of congressional authorizations.....			\$5,000
Unencumbered balance, June 30, 1924.....			5,000
Fiscal year 1925, amount specified in appropriation act.....			5,000
To June 30, 1924:			
Irrigation works—			
Original construction.....	\$11,292,362.55		
Value of works taken over.....	1,451,860.04		
Total construction cost ¹	12,744,222.59		
Operation and maintenance prior to public notice (net).....	115,993.50		
			\$12,860,216.09
Less—			
Construction revenues.....	2,312,096.81		
Non reimbursable cost.....	382,097.31		
			2,694,194.12
To be repaid by water users.....			10,166,021.97
Repayments—			
Contract, Salt River Valley Water Users' Association.....			10,166,021.97
¹ Reconciliation: Net cost to date, twenty-second annual report.....			
Plus miscellaneous revenues to June 30, 1923.....	\$2,312,096.81		\$10,548,119.28
Less operation and maintenance prior to public notice, June 30, 1923 (net).....	115,993.50		
			2,196,103.31
Construction cost to June 30, 1923.....			12,744,222.59

Investment

	Reclamation fund	Increase of compensation (net)	Total
Disbursements and net transfers.....	\$14,662,033.96	\$9,450.28	\$14,671,484.24
Less collections.....	5,880,699.73		5,880,699.73
Net investment June 30, 1924.....	8,781,334.23	9,450.28	8,790,784.51

Status of current accounts receivable June 30, 1924

	Due		Collected	
	Fiscal year 1924	To June 30, 1924	Fiscal year 1924	To June 30, 1924
Construction:				
Water-right charges.....	\$809,961.32	\$1,696,922.64	\$809,961.32	\$1,696,922.64
Charges paid in advance.....			5,780.84	10,635.34
Revenues:				
Rentals of irrigation water.....		2,246,726.01		2,246,726.01
Rentals of power and light.....		998,411.03		998,411.03
Rentals of grazing and farming lands.....		19,373.14		19,373.14
Subtotal.....		3,264,510.18		3,264,510.18
Miscellaneous collections.....			23,464.71	908,631.57
Grand total collections.....			839,206.87	5,880,699.73

YUMA PROJECT, ARIZONA-CALIFORNIA

Appropriations:			
Fiscal year 1924—			
Congressional authorizations.....			\$595,015.48
Disbursements.....		\$412,009.26	
Liabilities outstanding.....		51,000.50	
			463,009.76
Unencumbered balance June 30, 1924.....			132,005.72
Fiscal year 1925—			
Amount specified in appropriation act.....			765,000.00

Investment

	Reclamation fund	Increase of compensa- tion (net)	Total
Disbursements and net transfers.....	\$12,368,465.97	\$157,550.87	\$12,526,016.84
Less collections.....	3,788,528.90		3,788,528.90
Net investment June 30, 1924.....	8,579,937.07	157,550.87	8,737,487.94

	Fiscal year 1924	To June 30, 1924
Irrigation works:		
Original construction ¹	\$27,994.36	\$8,744,889.68
Operation and maintenance prior to public notice (net)....	² 1,167.82	373,049.15
Operation and maintenance arrearages being repaid with construction.....		26.32
Less—		\$9,117,965.15
Contributed funds.....		101,113.89
Construction revenues.....	² 9,810.84	54,855.15
		155,969.04
To be repaid by water users.....	36,637.38	8,961,996.11
Repayment—		
Water-right contracts (individual).....	299,178.50	5,941,647.78

¹ Reconciliation: Net cost to date, twenty-second annual report.....	\$9,026,572.84
Plus miscellaneous revenues, June 30, 1923.....	\$64,665.99
Less operation and maintenance deficits and arrearages June 30, 1923.....	\$26.32
Cost adjustments and undistributed clearing June 30, 1923.....	100.22
Operation and maintenance prior to public notice June 30, 1923 (net).....	374,216.97
	374,343.51
	309,677.52
Construction cost to June 30, 1923.....	8,716,895.32
Cost, fiscal year 1924.....	27,994.36
Construction cost to June 30, 1924.....	8,744,889.68
² Contra.	

	Calendar year 1923	To Dec. 31, 1923	Fiscal year 1924	To June 30, 1924
Operation and maintenance cost.....	\$352,764.62	\$2,005,133.76	\$397,259.80	\$2,220,604.76
To repay operation and maintenance cost:				
Charges contracted.....	275,120.26	1,389,622.71	347,270.34	1,467,550.72
Penalties.....	17,357.48	32,312.93	19,826.33	45,018.64
Discounts (contra).....	4,729.91	13,846.32	6,156.49	19,459.39
Miscellaneous revenues.....	30,904.00	167,379.31	² 45,631.13	107,950.77
Subtotal.....	318,651.83	1,575,468.63	315,309.05	1,601,060.74
Other credits:				
Operation and maintenance arrearages be- ing repaid with construction.....		26.32		26.32
Total.....	318,651.83	1,575,494.95	315,309.05	1,601,087.06
Result, deficit.....	34,112.79	429,638.81	81,950.75	619,517.70

Status of current accounts receivable as of June 30, 1924

	Due		Collected				Uncollected June 30, 1924
	Fiscal year 1924	To June 30, 1924	Cash		Other credits		
			Fiscal year 1924	To June 30, 1924	Fiscal year 1924	To June 30, 1924	
Construction:							
Water-right charges.....	\$417,502.13	\$1,471,527.46	\$311,415.35	\$1,290,851.87	\$2,012.32	\$3,164.89	\$177,510.70
Contributed funds.....		101,113.89		101,113.89			
Total.....	417,502.13	1,572,641.35	311,415.35	1,391,965.76	2,012.32	3,164.89	177,510.70
Charges paid in advance.....			¹ 3,435.55	7,766.67		146.81	
Operation and maintenance:							
Water-right charges, project lands (63,084 acres).....	345,350.95	1,465,631.33	366,958.53	1,290,664.25	6,262.55	23,577.92	151,389.16
Penalties and interest.....			19,816.07	44,718.09	10.26	300.55	
Charges paid in advance.....			¹ 2,477.40	1,473.83	499.85	559.20	
Revenues:							
Rentals of irrigating water ²	¹ 51,694.11	444,298.73	¹ 50,649.48	440,199.29		292.01	3,807.43
Rentals of grazing and farming lands.....	2,000.92	13,857.02	2,032.92	13,703.85			153.17
Subtotal.....	¹ 49,693.19	458,155.75	¹ 48,616.56	453,903.14		292.01	3,960.60
Miscellaneous uncollected.....							1,558.03
Other collections (reclamation fund):							
Construction forfeitures.....			727.42	3,179.94			
Construction penalties.....			54,127.43	91,109.77			
Construction refunds.....				1,583.60			
Operation and maintenance refunds.....				248.91			
Miscellaneous.....			60,370.04	501,914.94			
Grant total collections.....			758,885.33	3,788,528.90			

¹ Contra.² Reduction due to transfer to operation and maintenance account. Uncollected construction water-right charges as of June 30, 1924, 12 per cent of total accruals. Uncollected operation and maintenance charges as of June 30, 1924, 10.3 per cent of total accruals.

YUMA AUXILIARY

Appropriations: All funds advanced by purchasers of lands and water rights.

	Irrigation works	Fiscal year 1924	To June 30, 1924
Construction cost, original.....		\$53,668.01	\$834,890.10
To return construction cost:			
Water-right contracts.....		¹ 108,220.00	936,466.00
Land-purchase contracts.....		¹ 15,613.95	129,090.53
Water-right contract forfeitures.....		4,482.00	8,882.00
Water-right contract interest.....		1,132.90	31,330.30
Land-purchase contract forfeitures.....		797.75	1,552.75
Land-purchase contract interest.....		230.45	4,145.16
Miscellaneous revenues.....		¹ 222.77	1,034.97
Total.....		¹ 117,413.62	1,112,501.71

¹ Contra.

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YUMA AUXILIARY—continued

	Calendar year 1923	To Dec. 31, 1923	Fiscal year 1924	To June 30, 1924
Operation and maintenance cost, original.....	\$51,030.20	\$66,625.05	\$47,363.41	\$88,647.89
To return operation and maintenance cost:				
Contracted.....	52,519.61	69,750.04	59,761.88	119,723.36
Interest.....	431.27	451.99	402.34	537.74
Discounts (contra).....	933.02	1,110.29	69.84	1,106.79
Miscellaneous revenue.....	75.00	75.00	75.00	150.00
Total.....	52,092.86	69,166.74	60,169.38	119,304.31

Status of current accounts receivable as of June 30, 1924

	Due		Collected				Uncol- lected June 30, 1924
	Fiscal year 1924	To June 30, 1924	Cash		Other credits		
			Fiscal year 1924	To June 30, 1924	Fiscal year 1924	To June 30, 1924	
Construction:							
Water-right charges.....	¹ \$108,970.00	\$935,716.00	¹ \$141.64	\$574,949.81			\$360,766.19
Land sales.....	¹ 15,733.95	128,970.3	¹ 71.79	79,213.09			49,757.44
Total.....	¹ 124,703.95	1,064,686.53	¹ 213.43	654,162.90			410,523.63
Interest.....			1,363.35	35,475.46			
Forfeitures.....			5,279.75	10,434.75			
Refunds.....			169.10	169.10			
Operation and maintenance:							
Water-right charges.....	59,761.88	119,723.36	26,422.05	54,655.53	\$69.84	\$1,106.79	63,961.04
Interest.....			402.34	537.74			
Paid in advance.....			50.27	224.75			
Revenues:							
Rentals of irrigation water.....	95.00	170.00	95.00	170.00			
Other miscellaneous collections.....			9,823.03	39,686.44			
Miscellaneous uncollected.....							6,219.08
Grand total collections.....			43,391.46	795,516.67			

¹ Contra.

ORLAND PROJECT, CALIFORNIA

Appropriations:

Fiscal year 1924—

Congressional authorizations.....	\$61,175.09
Disbursements.....	\$48,505.00
Liabilities outstanding.....	2,168.40
	50,673.40

Unencumbered balance June 30, 1924..... 10,501.69

Fiscal year 1925—

Amount specified in appropriation act..... 40,000.00

Investment

	Reclamation fund	Increase of compensation	Total
Disbursements and net transfers.....	\$1,503,489.40	\$31,620.34	\$1,535,109.74
Less collections.....	704,004.72		704,004.72
Net investment June 30, 1924.....	799,484.68	31,620.34	831,105.02

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	Fiscal year 1924	To June 30, 1924
Irrigation works:		
Original construction	¹ \$7, 181. 63	\$920, 208. 33
Supplemental construction	30, 070. 78	220, 288. 16
Total construction cost ²	22, 889. 15	1, 140, 496. 49
Operation and maintenance prior to public notice (net)		¹ 11, 729. 99
Less:		\$1, 128, 766. 50
Construction revenues	974. 51	14, 588. 56
To be repaid water users	21, 914. 64	1, 114, 177. 94
Repayments:		
Water-right contracts		1, 119, 572. 75

¹ Contra.

² Reconciliation: Net cost to date, twenty-second annual report

Plus:

Miscellaneous revenues, June 30, 1923	\$13, 614. 05
Cost adjustments, June 30, 1923	467. 43
Operation and maintenance prior to public notice, June 30, 1923 (net)	11, 729. 99
	25, 811. 47

Construction cost to June 30, 1923

Actual cost, fiscal year 1924

Less transferred to secondary projects

Construction cost to June 30, 1924

	Calendar year 1923	To Dec. 31, 1923	Fiscal year 1924	To June 30, 1924
Operation and maintenance cost	\$33, 081. 27	\$234, 558. 75	\$30, 389. 81	\$250, 119. 10
To repay operation and maintenance cost:				
Charges contracted	34, 773. 66	245, 705. 73	34, 773. 66	245, 705. 73
Penalties	6. 27	39. 97	27. 95	65. 72
Discounts (contra)	1, 708. 62	12, 107. 45	1, 709. 27	12, 108. 94
Miscellaneous revenues	118. 15	1, 534. 99	28. 05	1, 537. 49
Total	33, 189. 46	235, 173. 24	33, 120. 39	235, 200. 00
Results:				
Excess	108. 19	614. 49	2, 730. 58	
Deficit				14, 919. 10

Status of current accounts receivable as of June 30, 1924

	Due		Collected				Uncol- lected, June 30, 1924
	Fiscal year 1924	To June 30, 1924	Cash		Other credits		
			Fiscal year 1924	To June 30, 1924	Fiscal year 1924	To June 30, 1924	
Construction:							
Water-right charges.....	\$69, 600. 48	\$304, 829. 90	\$68, 374. 37	\$303, 603. 79	-----	-----	\$1, 226. 11
Charges paid in advance.....				5, 385. 16	-----	-----	
Operation and maintenance:							
Water-right charges, project lands (20,174.05 acres).....	34, 773. 66	245, 705. 73	33, 100. 12	233, 413. 90	\$1, 709. 27	\$12, 108. 94	182. 89
Penalties and interest.....			27. 95	65. 72	-----	-----	
Revenues:							
Rentals of irrigating water.....		120, 384. 00	-----	120, 384. 00	-----	-----	
Rentals grazing and farming lands.....	47. 50	79. 50	47. 50	79. 50	-----	-----	
Subtotal.....	47. 50	120, 463. 50	47. 50	120, 463. 50	-----	-----	
Other collections (reclamation fund):							
Construction forfeitures.....				99. 09	-----	-----	
Construction penalties.....				37. 42	-----	-----	
Miscellaneous.....			2, 952. 18	40, 936. 14	-----	-----	
Grand total collections.....			104, 502. 12	704, 004. 72	-----	-----	

GRAND VALLEY PROJECT, COLORADO

Appropriations:

Fiscal year 1924—

Congressional authorization.....		\$474,797.97
Disbursements.....	\$312,531.58	
Liabilities outstanding.....	29,396.52	
		341,928.10

Unencumbered balance June 30, 1924..... 132,869.87

Fiscal year 1925:

Amount specified in appropriation act..... 465,000.00

Investment

	Reclamation fund	Increase of compensation (net)	Total
Disbursements and net transfers.....	\$4,760,674.24	\$77,068.96	\$4,837,743.20
Less collections.....	382,459.89		382,459.89
Net investment June 30, 1924.....	4,378,214.35	77,068.96	4,455,283.31

	Fiscal year 1924	To June 30, 1924
Irrigation works:		
Original construction ¹	\$309,605.20	\$4,252,321.42
Operation and maintenance prior to public notice (net).....	² 11,480.22	117,949.06
		\$4,370,270.48
Less:		
Construction revenues.....	1,852.68	56,945.08
To be repaid by water users.....	296,272.30	4,313,325.40
Repayments:		
Contract Orchard Mesa irrigation district.....		1,000,000.00

¹ Reconciliation: Net cost to date, twenty-second annual report..... \$4,017,921.98

Less:

Cost adjustments June 30, 1923..... \$868.88

Operation and maintenance prior to public notice, June 30, 1923 (net)..... 129,429.28

Plus construction revenues June 30, 1923..... \$130,298.16
55,092.40
75,205.76

Construction cost to June 30, 1923..... 3,942,716.22

Actual cost, fiscal year 1924..... 309,605.20

Construction cost to June 30, 1924..... 4,252,321.42

² Contra.

Status of current accounts receivable as of June 30, 1924

	Due		Collected				Uncollected June 30, 1924
	Fiscal year 1924	To June 30, 1924	Cash		Other credits		
			Fiscal year 1924	To June 30, 1924	Fiscal year 1924	To June 30, 1924	
Revenues:							
Rentals of irrigating water.....	\$55,649.75	\$275,479.09	\$60,026.58	\$244,528.71	\$1,577.56	\$4,000.14	\$26,950.24
Rentals of grazing and farming lands.....	50.00	279.00	50.00	217.00			62.00
Total.....	55,699.75	275,758.09	60,076.58	244,745.71	1,577.56	4,000.14	27,012.24
Miscellaneous uncollected Other collections (recla- mation fund):							330.75
Miscellaneous.....			13,279.87	137,714.18			
Grand total collec- tions.....			73,356.45	382,459.89			

UNCOMPAHGRE PROJECT, COLORADO

Appropriations:

Fiscal year 1924—

Congressional authorization..... \$198,341.47

Disbursements..... \$123,895.31

Liabilities outstanding..... 7,951.82

131,857.13

Unencumbered balance June 30, 1924..... 66,484.34

Fiscal year 1925—

Amount specified in appropriation act..... 150,000.00

Investment

	Reclamation fund	Increase of compensation (net)	Total
Disbursements and net transfers.....	\$8,163,374.13	\$102,130.03	\$8,265,504.16
Less collections.....	1,527,752.38		1,527,752.38
Net investment June 30, 1924.....	6,635,621.75	102,130.03	6,737,751.78

	Fiscal year 1924	To June 30, 1924
Irrigation works:		
Original construction.....	¹ \$219.73	\$6,363,682.13
Value of works taken over.....		73,162.17
Total construction cost ²	¹ 219.73	6,436,844.30
Operation and maintenance prior to public notice (net)....	¹ 3,645.48	304,726.50
		\$6,741,570.80
Less:		
Construction revenues.....	788.09	30,971.88
Nonreimbursible cost.....		47,370.81
		78,342.69
To be repaid by water users.....	¹ 4,653.90	6,663,228.11
Repayments:		
Contract, Uncompahgre Valley Water Users' Association.....		6,713,584.50

¹ Contra.² Reconciliation: Net cost to date, twenty-second annual report..... \$6,715,074.41

Less operation and maintenance prior to public notice, June 30, 1923 (net)..... \$308,371.98

Plus cost adjustments, June 30, 1923..... \$178.41

Construction revenues, June 30, 1923..... 30,183.19

30,361.60

278,010.38

Construction cost to June 30, 1923..... 6,437,064.03

Actual cost, fiscal year 1924..... ¹ 219.73

6,436,844.30

	Calendar year 1923	To Dec. 31, 1923	Fiscal year 1924	To June 30, 1924
Operation and maintenance cost.....	\$140,494.37	\$140,494.37	\$138,695.51	\$219,737.17
To repay operation and maintenance cost:				
Charges contracted.....	158,395.50	158,395.50	157,841.45	157,841.45
Penalties.....			179.25	179.25
Discounts (contra).....	3,181.62	3,181.62	3,312.02	3,312.02
Miscellaneous revenues.....	780.31	780.31	2,697.38	3,261.85
Total.....	155,994.19	155,994.19	157,406.06	157,970.53
Results:				
Excess.....	15,499.82	15,499.82	18,710.55	
Deficit.....				61,766.64

Status of current accounts receivable as of June 30, 1924

	Due		Collected				Uncollected June 30, 1924
	Fiscal year 1924	To June 30, 1924	Cash		Other credits		
			Fiscal year 1924	To June 30, 1924	Fiscal year 1924	To June 30, 1924	
Construction:							
Water-right charges.....	\$118,237.07	\$264,498.37	\$24,915.91	\$54,014.79	\$20,335.36	\$34,832.44	\$175,651.14
Charges paid in advance.....			72.65	111.66	18,239.45	40,831.92	
Operation and maintenance:							
Irrigation districts (94,229.6 acres).....	157,841.45	157,841.45	82,923.36	82,923.36	5,628.57	5,628.57	69,289.52
Penalties and interest			124.91	124.91	54.34	54.34	
Charges paid in advance.....			1,041.99	501.61	85.70	85.70	
Revenues:							
Rentals of irrigating water.....	6,338.05	1,189,114.15	17,677.04	1,154,265.56	2,254.82	12,090.44	22,758.15
Rentals grazing and farming lands.....	45.45	197.45	45.45	197.45			
Subtotal.....	6,383.50	1,189,311.60	17,722.49	1,154,463.01	2,254.82	12,090.44	22,758.15
Miscellaneous uncollected.....							149.68
Other collections (reclamation fund) miscellaneous.....			4,420.33	235,613.04			
Grand total collections.....			129,137.66	1,527,752.38			

¹ Contra.

Uncollected construction water-right charges as of June 30, 1924, 66.4 per cent of total accruals. Uncollected operation and maintenance charges as of June 30, 1924, 43.9 per cent of total accruals.

BOISE PROJECT, IDAHO

Appropriations:

Fiscal year 1924—		
Congressional authorizations.....		\$1,521,763.36
Disbursements.....	\$1,081,926.08	
Liabilities (outstanding).....	45,066.16	
		1,126,992.24
Unencumbered balance June 30, 1924.....		394,771.12
Fiscal year 1925, amount specified in appropriation act.....		1,080,000.00

Investment

	Reclamation fund	Judgments, Court of Claims	Increase of compensation (net)	Total
Disbursements and net transfers.....	\$17,156,442.70	\$50,228.93	\$205,269.70	\$17,411,941.33
Less collections.....	4,848,318.84			4,848,318.84
Net investment June 30, 1924.....	12,308,123.86	50,228.93	205,269.70	12,563,622.49

	Fiscal year 1924	To June 30, 1924
Irrigation works:		
Original construction.....	\$1, 239, 438. 24	\$13, 683, 227. 97
Value of works taken over.....		29, 812. 50
Total construction cost ¹	1, 239, 438. 24	13, 713, 040. 47
Operation and maintenance prior to public notice (net).....		422, 192. 62
Less construction revenues.....	12, 490. 02	\$14, 135, 233. 09 194, 581. 03
To be repaid by water users.....	1, 226, 948. 22	13, 940, 652. 06
Repayments:		
Water-right contracts (individual).....	35, 192. 33	7, 528, 052. 19
Warren Act contracts.....	225. 00	28, 779. 17
Irrigation district contracts.....	1, 794, 832. 82	6, 921, 855. 35
Total.....	1, 830, 250. 15	14, 478, 686. 71

¹ Reconciliation: Net cost to date, twenty-second annual report.....	\$12, 731, 409. 73
Less cost adjustments June 30, 1923.....	\$17, 705. 89
Operation and maintenance prior to public notice June 30, 1923 (net).....	422, 192. 62
	439, 898. 51
Plus: Construction revenues.....	182, 091. 01
	257, 807. 50
Construction cost to June 30, 1923.....	12, 473, 602. 23
Actual cost, fiscal year 1924.....	1, 239, 438. 24
Construction cost to June 30, 1924.....	13, 713, 040. 47

	Calendar year 1923	To Dec. 31, 1923	Fiscal year 1924	To June 30, 1924
Operation and maintenance cost, regular.....	\$229, 702. 77	\$1, 737, 846. 88	\$191, 032. 89	\$1, 827, 426. 00
To repay operation and maintenance cost:				
Charges contracted.....	245, 943. 16	1, 743, 312. 54	255, 078. 36	1, 754, 317. 86
Penalties.....	10, 620. 49	25, 820. 67	5, 929. 96	27, 206. 95
Discounts (contra).....	4, 888. 90	43, 043. 05	2, 570. 40	44, 095. 41
Miscellaneous revenues.....	13, 759. 28	113, 970. 26	14, 721. 92	115, 559. 28
Total.....	265, 434. 03	1, 840, 060. 42	273, 159. 84	1, 852, 988. 63
Results: Excess.....	35, 731. 26	102, 213. 54	82, 126. 95	25, 562. 68
Operation and maintenance cost, drainage.....	114, 479. 55	186, 592. 79	208, 562. 05	309, 822. 27
To repay operation and maintenance costs, drainage:				
Charges contracted.....	138, 793. 02	411, 388. 79	138, 256. 65	480, 335. 27
Penalties.....	9, 599. 09	11, 201. 85	14, 670. 39	24, 546. 36
Discounts (contra).....	1, 319. 34	3, 813. 12	1, 124. 88	4, 294. 02
Total.....	147, 072. 77	418, 777. 52	151, 802. 16	500, 587. 61
Results:				
Excess.....	32, 593. 22	232, 184. 73		190, 765. 34
Deficit.....			56, 759. 89	

Status of current accounts receivable as of June 30, 1924

	Due		Collected				Uncollected June 30, 1924
	Fiscal year 1924	To June 30, 1924	Cash		Other credits		
			Fiscal year 1924	To June 30, 1924	Fiscal year 1924	To June 30, 1924	
Construction:							
Water-right charges	\$670, 728. 53	\$2, 408, 552. 66	\$233, 945. 35	\$1, 608, 122. 87	-----	\$25, 092. 00	\$775, 337. 79
Charges paid in advance	-----	-----	1 1, 234. 86	7, 809. 70	-----	-----	-----
Operation and maintenance (regular):							
Water-right charges, project lands (97,-048.51 acres)	158, 154. 87	1, 124, 061. 66	75, 688. 07	813, 089. 35	\$2, 069. 18	26, 661. 76	284, 310. 55
Warren Act lands (379.07 approximate acres)	1, 286. 51	2, 955. 94	454. 03	2, 123. 46	-----	-----	832. 48
Irrigation districts (68,305.11 approximate acres)	95, 636. 98	627, 300. 26	79, 920. 50	547, 611. 08	501. 22	17, 433. 65	62, 255. 53
Subtotal	255, 078. 36	1, 754, 317. 86	156, 062. 60	1, 362, 823. 89	2, 570. 40	44, 095. 41	347, 398. 56
Penalties and interest	-----	-----	5, 929. 96	27, 206. 95	-----	-----	-----
Charges paid in advance	-----	-----	. 17	. 19	-----	-----	-----
Operation and maintenance (drainage):							
Water-right charges, project lands (97,-048.51 acres)	92, 900. 50	326, 500. 15	75, 330. 23	217, 550. 62	875. 51	4, 044. 65	104, 904. 88
Rental lands (5,598.50 approximate acres)	5, 392. 61	13, 699. 23	4, 017. 87	8, 060. 81	249. 37	249. 37	5, 389. 05
Irrigation districts (68,305.11 approximate acres)	39, 963. 54	140, 135. 89	40, 073. 54	80, 147. 08	-----	-----	59, 988. 81
Total	138, 256. 65	480, 335. 27	119, 421. 64	305, 758. 51	1, 124. 88	4, 294. 02	170, 282. 74
Penalties and interest	-----	-----	14, 670. 39	24, 546. 36	-----	-----	-----
Charges paid in advance	-----	-----	10. 60	10. 60	-----	-----	-----
Revenues:							
Rentals of irrigating water	14, 278. 57	754, 293. 75	8, 840. 40	731, 007. 61	-----	4, 720. 50	18, 565. 64
Power and light	10, 890. 11	128, 169. 91	-----	96, 424. 61	10, 890. 11	31, 745. 30	-----
Grazing and farming lands	520. 41	20, 668. 20	520. 41	20, 579. 50	-----	-----	88. 70
Subtotal	25, 689. 09	903, 131. 86	9, 360. 81	848, 011. 72	10, 890. 11	36, 465. 80	18, 654. 34
Miscellaneous uncollected	-----	-----	-----	-----	-----	-----	2, 555. 88
Other collections (reclamation fund)—							
Construction penalties	-----	-----	9, 412. 85	44, 929. 75	-----	-----	-----
Construction refunds	-----	-----	-----	567. 77	-----	-----	-----
Operation and maintenance refunds	-----	-----	36. 08	429. 87	-----	-----	-----
Miscellaneous	-----	-----	63, 571. 40	618, 100. 66	-----	-----	-----
Grand total collections	-----	-----	611, 186. 99	4, 848, 318. 84	-----	-----	-----

¹ Contra.

Uncollected construction water-right charges as of June 30, 1924, 32.2 per cent of total accruals. Uncollected regular operation and maintenance charges as of June 30, 1924, 19.8 per cent of total accruals. Uncollected operation and maintenance (drainage) charges as of June 30, 1924, 35.5 per cent of total accruals.

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KING HILL PROJECT, IDAHO

Appropriations:

Fiscal year 1924—

Congressional authorizations.....	\$52,732.65
Disbursements.....	\$44,518.99
Liabilities outstanding.....	406.17
	<u>44,925.16</u>

Unencumbered balance June 30, 1924.....	7,807.49
Fiscal year 1925, amount specified in appropriation act.....	40,000.00

Investment

	Reclamation fund	Increase of compensation (net)	Total
Disbursements and net transfers.....	\$1,939,733.30	\$103,502.17	\$2,043,235.47
Less collections.....	113,296.81		113,296.81
Net investment June 30, 1924.....	1,826,436.49	103,502.17	1,929,938.66

	Fiscal year 1924	To June 30, 1924
Irrigation works:		
Original construction ¹	\$7,195.50	\$1,892,180.14
Operation and maintenance prior to public notice.....	² 6,135.61	8,533.43
		<u>\$1,900,713.57</u>
Less construction revenues.....	1,381.26	12,906.90
To be repaid by water users.....	² 321.37	1,887,806.67
Repayments:		
Contract, King Hill Irrigation District.....		2,000,000.00

¹ Reconciliation: Net cost to date, twenty-second annual report.....	\$1,881,391.45
Plus miscellaneous revenues, June 30, 1923.....	\$11,525.64
Less cost adjustments, June 30, 1923.....	\$6,736.59
Operation and maintenance prior to public notice, June 30, 1923 (net).....	14,669.04
	<u>7,932.45</u>
	3,593.19

Construction cost to June 30, 1923.....	1,884,984.64
Actual cost, fiscal year 1924.....	7,195.50
Construction cost to June 30, 1924.....	<u>1,892,180.14</u>

² Contra.

Status of current accounts receivable as of June 30, 1924

	Due		Collected				Uncollected June 30, 1924
	Fiscal year 1924	To June 30, 1924	Cash		Other credits		
			Fiscal year 1924	To June 30, 1924	Fiscal year 1924	To June 30, 1924	
Construction: Water-right charges.....	\$127,416.97						
Revenues:							
Rentals of irrigating water.....	36,138.21	\$88,368.94	\$1,146.46	\$50,515.83			\$37,853.11
Miscellaneous uncollected							156.89
Other collections (reclamation fund).....			8,652.09	62,780.98			
Grand total collections.....			9,798.55	113,296.81			

¹ Contra.

MINIDOKA PROJECT, IDAHO

Appropriations:

Fiscal year 1924—

Congressional authorizations.....	\$231,069.25
Disbursements.....	\$191,680.00
Liabilities outstanding.....	33,142.81
	<u>224,822.81</u>

Unencumbered balance June 30, 1924.....	6,246.44
Fiscal year 1925, amount specified in appropriation act.....	<u>370,000.00</u>

Investment

	Reclamation fund	Judgments, Court of Claims	Increase of compensation (net)	Total
Disbursements and net transfers.....	\$8,658,747.48	\$15,550.90	\$118,743.46	\$8,793,041.84
Less collections.....	5,287,136.06			5,287,136.06
Net investment June 30, 1924.....	<u>3,371,611.42</u>	<u>15,550.90</u>	<u>118,743.46</u>	<u>3,505,905.78</u>

	Fiscal year 1924	To June 30, 1924
Irrigation works:		
Original construction ¹	² \$1,738,978.69	\$5,623,286.96
Supplemental construction.....		749,429.74
Value of works taken over.....		<u>211,782.66</u>
Total construction cost.....	² 1,738,978.69	\$6,584,499.36
Operation and maintenance prior to public notice.....	2,314.84	155,462.69
Operation and maintenance arrearages being rapid with construction.....		<u>12,313.86</u>
		<u>6,752,275.91</u>
Less:		
Contributed funds.....		799,250.96
Construction revenues.....	110,580.90	<u>561,560.54</u>
		1,360,811.50
To be repaid by water users.....	² 1,847,244.75	<u>5,391,464.41</u>
Repayment:		
Water-right contracts (individual).....	³ 248,294.40	5,605,107.13
Water-right contracts (Warren Act).....		<u>429,412.50</u>
Total.....	² 248,294.40	<u>6,034,519.63</u>

¹ Reconciliation: Net cost to date, twenty-second annual report.....	\$8,066,977.12
Plus miscellaneous revenues to June 30, 1923.....	<u>\$121,962.64</u>
Less—	
Operation and maintenance arrearages, June 30, 1923.....	\$12,313.86
Operation and maintenance prior to public notice June 30, 1923 (net).....	<u>153,147.85</u>
	<u>165,461.71</u>
	256,500.93
Construction cost to June 30, 1924.....	<u>8,323,478.05</u>
Actual cost, fiscal year 1924.....	83,207.81
Transferred to American Falls.....	² 1,822,189.50
	<u>2,173,978.69</u>
Construction cost to June 30, 1924.....	<u>6,584,499.36</u>

² Contra.³ \$318,750 transferred to American Falls. Actual increase for fiscal year, \$70,455.60.

	Calendar year 1923	To Dec. 31, 1923	Fiscal year 1924	To June 30, 1924
Operation and maintenance cost.....	\$122,900.00	\$1,545,681.68	\$126,788.79	\$1,603,178.06
To repay operation and maintenance cost:				
Charges contracted.....	137,375.91	1,501,983.23	141,265.25	1,540,318.75
Penalties.....	6,026.86	24,764.43	4,767.71	27,056.72
Discounts (contra).....	2,640.04	19,220.60	1,843.13	19,287.53
Miscellaneous revenues.....	5,358.44	98,528.05	3,534.81	98,528.05
Other credits: Arrearages to be repaid with construction.....		<u>12,313.86</u>		<u>12,313.86</u>
Total.....	<u>146,121.17</u>	<u>1,618,368.97</u>	<u>147,724.64</u>	<u>1,658,929.85</u>
Results: Excess.....	<u>23,221.17</u>	<u>72,687.29</u>	<u>20,935.85</u>	<u>55,751.79</u>

Status of current accounts receivable as of June 30, 1924

	Due		Collected				Un- collected June 30, 1924
	Fiscal year 1924	To June 30, 1924	Cash		Other credits		
			Fiscal year 1924	To June 30, 1924	Fiscal year 1924	To June 30, 1924	
Construction:							
Water-right charges.....	\$249,465.22	\$2,383,159.84	\$174,622.52	\$1,846,230.67	\$133.37	\$154,423.24	\$382,505.93
Contributed funds.....	¹ 29,017.00	799,250.96	¹ 29,017.00	799,250.96	-----	-----	-----
Total ²	220,448.22	3,182,410.80	145,605.52	2,645,481.63	133.37	154,423.24	382,505.93
Charges paid in advance ³	-----	-----	¹ 209,985.55	2,056.71	-----	-----	-----
Operation and main- tenance:							
Water-right charges, project lands (119, 845 acres).....	119,495.02	1,372,410.89	101,427.23	1,109,574.03	1,956.66	69,914.67	192,922.19
Warren Act lands (approximate ly 626,840 acres).....	23,547.72	130,174.13	23,718.29	130,162.79	-----	-----	11.34
Total.....	143,042.74	1,502,585.02	125,145.52	1,239,736.82	1,956.66	69,914.67	192,933.53
Penalties and inter- est:.....	-----	-----	4,714.42	26,953.11	53.29	103.61	-----
Charges paid in ad- vance.....	-----	-----	¹ 9,312.86	1,711.28	-----	-----	-----
Revenues:							
Rentals of irrigat- ing water.....	1,219.97	272,023.33	1,355.90	268,657.43	-----	3,234.23	131.67
Rentals power and light.....	107,275.49	799,046.79	107,047.69	770,820.27	6.34	4,818.42	23,408.10
Rentals grazin g and farm lands.....	749.29	34,372.16	840.42	30,207.93	-----	-----	4,164.23
Total.....	109,244.75	1,105,442.28	109,244.01	1,069,685.63	6.34	8,052.65	27,704.00
Miscellaneous un- collected.....	-----	-----	-----	-----	-----	-----	22.50
Other collections (reclamation fund)—							
Construction forfeitures.....	-----	-----	6.22	9,346.03	-----	-----	-----
Construction penalties.....	-----	-----	18,144.04	62,463.49	-----	-----	-----
Construction re- funds.....	-----	-----	1,732.64	3,163.72	-----	-----	-----
Operating and maintenance refunds.....	-----	-----	786.78	8,699.21	-----	-----	-----
Miscellaneous.....	-----	-----	¹ 23,906.49	217,838.43	-----	-----	-----
Grand total collections.....	-----	-----	162,174.25	5,287,136.06	-----	-----	-----

¹ Contra.² Accruals and collections \$98,517 transferred to American Falls account during fiscal year. Actual accruals for the year \$318,965.22 and collections \$244,122.52.³ Transferred to American Falls during the year.....\$197,983.34
Actual advance (decrease).....12,002.21

Net decrease.....209,985.55

Uncollected construction water right charges as of June 30, 1924, 16.0 per cent of total accruals.

Uncollected operation and maintenance charges as of June 30, 1924, 12.8 per cent of total accruals.

AMERICAN FALLS

Appropriations:

Fiscal year 1924—

Congressional authorizations	\$1,058,370.59
Disbursements	\$294,666.63
Liabilities outstanding	301,343.57
	596,010.20

Unencumbered balance June 30, 1924.....462,360.39

Fiscal year 1925, amount specified in appropriation act.....675,000.00

Investment

	Reclamation fund	Increase of compensation (net)	Total
Disbursements and net transfers.....	\$2, 098, 626. 75	\$3, 959. 25	\$2, 102, 586. 00
Less collections.....	510, 833. 66		510, 833. 66
Net investment June 30, 1924.....	1, 587, 793. 09	3, 959. 25	1, 591, 752. 34

	Fiscal year 1924	To June 30, 1924
Irrigation works:		
Original construction.....	\$2, 114, 831. 57	\$2, 114, 831. 57
Less construction revenues.....	¹ 180, 275. 86	¹ 180, 275. 86
To be repaid by water users.....	2, 295, 107. 43	2, 295, 107. 43
Repayment: Water-right contracts (Warren Act).....	4, 562, 782. 00	4, 562, 782. 00

¹ Contra.

NOTE.—Previous to this fiscal year the accounts for American Falls Reservoir were combined with those of the Minidoka project, separation being made in November, 1923. The actual cost of construction during this fiscal year was \$325,264.10, while revenue accounts showed a loss of \$110,226.43.

Status of current accounts receivable as of June 30, 1924

	Due		Collected		Uncollected June 30, 1924
			Cash		
	Fiscal year 1924	To June 30, 1924	Fiscal year 1924	To June 30, 1924	
Construction:					
Water-right charges.....	1 \$33,607. 00	\$33, 607. 00	1 \$33, 607. 00	\$33, 607. 00	-----
Charges paid in advance.....			2 375, 000. 00	375, 000. 00	-----
Miscellaneous uncollected.....					234. 61
Other collections (reclamation fund):					
Miscellaneous.....			102, 226. 66	102, 226. 66	-----
Grand total collections.....			510, 833. 66	510, 833. 66	-----

¹ Transferred from Minidoka project..... \$98, 517. 00
To advance..... 64, 910. 00

Net..... 33, 910. 00
² Transferred from Minidoka project (prior years)..... 197, 983. 34
Collected during this fiscal year..... 112, 106. 66
Adjustment as above..... 64, 910. 00
Adjustment as above..... 375, 000. 00

HUNTLEY PROJECT, MONTANA

Appropriations:
Fiscal year 1924—
Congressional authorizations..... 109, 406. 74
Disbursements..... \$27, 816. 20
Liabilities outstanding..... 3, 516. 18
31, 332. 38

Unencumbered balance June 30, 1924..... 78, 074. 36
Fiscal year 1925, amount specified in appropriation act..... 150, 000. 00

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Investment

	Reclamation fund	Increase of compensation (net)	Total
Disbursements and net transfers.....	\$2, 420, 129. 93	\$31, 445. 97	\$2, 451, 575. 90
Less collections.....	824, 909. 47	-----	824, 909. 47
Net investment June 30, 1924.....	1, 595, 220. 46	31, 445. 97	1, 626, 666. 43

	Fiscal year 1924	To June 30, 1924
Irrigation works:		
Original construction.....	\$811. 91	\$1, 124, 946. 46
Supplemental construction.....	2, 323. 03	373, 736. 05
Total construction cost ¹	3, 134. 94	1, 498, 682. 51
Operation and maintenance prior to public notice (net).....	² 197. 05	² 621. 59
Operation and maintenance arrearages being repaid with construction.....	-----	1, 214. 64
Less:		\$1, 499, 275. 56
Contributed funds.....	-----	717. 64
Construction revenues.....	285. 36	16, 272. 48
		16, 990. 12
To be repaid by water users.....	2, 652. 53	1, 482, 285. 44
Repayments: Water-right contracts (individual).....	² 6, 126. 10	1, 314, 490. 15

¹ Reconciliation: Net cost to date, twenty-second annual report.....		\$1, 475, 623. 45
Plus miscellaneous revenues, June 30, 1923.....	\$15, 987. 12	
Operation and maintenance prior to public notice, June 30, 1923 (net).....	424. 54	
Cost adjustments, June 30, 1923.....	4, 727. 10	
		21, 138. 76

Less operation and maintenance arrearages, June 30, 1923, to be repaid with construction.....	1, 496, 762. 21
	1, 214. 64
Construction cost to June 30, 1923.....	1, 495, 547. 57
Actual cost fiscal year 1924.....	3, 134. 94
Construction cost to June 30, 1924.....	1, 498, 682. 51

	Calendar year 1923	To Dec. 31, 1923	Fiscal year 1924	To June 30, 1924
Operation and maintenance cost.....	\$36, 945. 12	\$875, 466. 85	\$32, 349. 03	\$891, 018. 73
To repay operation and maintenance cost:				
Charges contracted.....	41, 344. 83	465, 643. 42	40, 142. 83	464, 305. 45
Penalties.....	3, 517. 29	8, 633. 83	3, 397. 09	10, 212. 35
Discounts (contra).....	1, 080. 14	7, 670. 49	855. 27	7, 758. 79
Miscellaneous revenues.....	890. 36	8, 492. 86	948. 48	9, 006. 21
Other credits: Operation and maintenance arreages being repaid with construction.....	-----	1, 214. 64	-----	1, 214. 64
Total.....	44, 672. 34	476, 314. 26	43, 633. 13	476, 979. 86
Results:				
Excess.....	7, 727. 22	-----	11, 284. 10	-----
Deficit.....	-----	399, 152. 59	-----	414, 038. 87

² Contra.

Status of current accounts receivable as of June 30, 1924

	Due		Collected				Uncollected June 30, 1924
	Fiscal year	To June 30, 1924	Cash		Other credits		
			Fiscal year 1924	To June 30, 1924	Fiscal year 1924	To June 30, 1924	
Construction:							
Water-right charges.....	\$25,002.82	\$416,930.21	\$17,539.50	\$376,667.22		\$502.21	\$39,760.78
Contributed funds.....		717.64		717.64			
Total.....	25,002.82	417,647.85	17,539.50	377,384.86		502.21	39,760.78
Charges paid in advance.....			¹ 155.17	553.49			
Operation and maintenance:							
Water-right charges, project lands (27,899.92 acres).....	30,376.57	454,539.19	37,895.86	351,811.31	\$984.59	8,501.98	94,225.90
Penalties and interest.....			3,357.82	10,036.58	39.27	175.77	
Charges paid in advance.....			¹ 440.44	21.27			
Revenues:							
Rentals of irrigation water.....	896.37	7,236.73	638.20	6,770.64			466.09
Rentals of grazing and farming lands.....	478.56	12,674.22	583.14	12,243.13			431.09
Total.....	1,374.93	19,910.95	1,221.34	19,013.77			897.18
Miscellaneous uncollected Other collections (reclamation fund):							63.25
Construction forfeitures.....			728.06	9,360.89			
Construction penalties.....			777.64	4,142.15			
Construction refunds.....				969.75			
Operation and maintenance refunds.....				96.97			
Miscellaneous.....			1,113.63	51,518.43			
Grand total collections.....			62,038.24	824,909.47			

¹ Contra.

Uncollected construction water-right charges as of June 30, 1924, 9.5 per cent of total accruals.

Uncollected operation and maintenance charges as of June 30, 1924, 20.7 per cent of total accruals.

MILK RIVER PROJECT, MONTANA

Appropriations:

Fiscal year 1924—

Congressional authorizations.....	\$195,590.68
Disbursements.....	\$106,148.82
Liabilities.....	5,366.69
	111,515.51

Unencumbered balance June 30, 1924.....

84,075.17

Fiscal year 1925, amount specified in appropriation act.....

315,000.00

Investment

	Reclamation fund	Judgments, Court of Claims	Increase of compensation	Total
Disbursements and net transfers.....	\$7,239,085.58	\$2,674.64	\$97,809.23	\$7,339,569.45
Less collections.....	385,275.10			385,275.10
Net investment June 30, 1924.....	6,853,810.48	2,674.64	97,809.23	6,954,294.35

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	Fiscal year 1924	To June 30, 1924
Irrigation works:		
Original construction ¹	\$87, 173. 56	\$6, 578, 617. 54
Operation and maintenance prior to public notice (net).....	64, 607. 21	388, 973. 17
		\$6, 967, 590. 71
Less:		
Construction revenues.....	1, 148. 63	61, 641. 71
To be repaid by water users.....	150, 632. 14	6, 905, 949. 00
¹ Reconciliation: Net cost to date, twenty-second annual report		\$6, 762, 083. 25
Plus miscellaneous revenues to June 30, 1923.....		60, 493. 08
		6, 822, 576. 33
Less operation and maintenance prior to public notice to June 30, 1923 (net).....		\$328, 030. 58
Cost adjustments, June 30, 1923.....		3, 101. 77
		331, 132. 35
Construction cost to June 30, 1924.....		6, 491, 443. 98
Actual cost, fiscal year 1924.....		87, 173. 56
Construction cost to June 30, 1924.....		6, 578, 617. 54

Status of current accounts receivable as of June 30, 1924

	Due		Collected				Uncollected June 30, 1924
	Fiscal year 1924	To June 30, 1924	Cash		Other credits		
			Fiscal year 1924	To June 30, 1924	Fiscal year 1924	To June 30, 1924	
Construction: Charges paid in advance				\$1, 114. 00			
Revenues:							
Rentals of irrigating water	\$15,953.38	\$192,059.66	\$20,013.37	172, 161. 63	\$528. 47	\$1, 015. 68	\$18, 882. 35
Rentals of grazing and farming lands	3, 774. 63	30, 914. 34	3, 758. 20	30, 490. 69	18. 00	38. 88	384. 77
Subtotal	19, 728. 01	222, 974. 00	23, 771. 57	202, 652. 32	546. 47	1, 054. 56	19, 267. 12
Miscellaneous uncollected							1, 841. 97
Other collections (reclamation fund): Miscellaneous			14, 158. 50	181, 508. 78			
Grand total collections			37, 930. 07	385, 275. 10			

SUN RIVER PROJECT, MONTANA

Appropriations:		
Fiscal year 1924—		
Congressional authorizations.....		\$182, 389. 89
Disbursements.....	\$111, 624. 36	
Liabilities outstanding.....	7, 351. 34	
		118, 975. 70
Unencumbered balance June 30, 1924.....		63, 414. 19
Fiscal year 1925, amount specified in appropriation act		150, 000. 00

Investment

	Reclamation fund	Judgments, Court of Claims	Increase of compensa- tion (net)	Total
Disbursements and net transfers.....	\$4, 770, 553. 25	\$1, 585. 35	\$68, 915. 10	\$4, 841, 053. 70
Less collections.....	465, 916. 41			465, 916. 41
Net investment June 30, 1924.....	4, 304, 636. 84	1, 585. 35	68, 915. 10	4, 375, 137. 29

	Fiscal year 1924	To June 30, 1924
Irrigation works:		
Original construction ¹	\$170, 278. 67	\$4, 340, 013. 09
Operation and maintenance prior to public notice (net).....	23, 165. 93	114, 774. 61
Operation and maintenance arrearages being repaid with construction.....		2, 518. 90
		\$4, 457, 306. 60
Less:		
Contributed funds.....	274. 69	\$274. 69
Construction revenues.....	² 223. 85	39, 579. 56
		39, 854. 25
To be repaid by water users.....	193, 393. 76	4, 417, 452. 35
Repayment: Water-right contracts (individual).....	² 13, 176. 00	409, 951. 04

	Calendar 1923	To Dec. 31, 1923	Fiscal year 1924	To June 30, 1924
Operation and maintenance cost.....	\$11, 469. 94	\$208, 350. 45	\$10, 833. 94	\$214, 728. 67
To repay operation and maintenance cost:				
Charges contracted.....	10, 136. 61	173, 438. 66	9, 786. 56	172, 701. 86
Penalties.....	809. 90	2, 563. 59	940. 34	2, 976. 92
Discounts (contra).....	269. 87	3, 007. 33	180. 98	3, 030. 76
Miscellaneous revenues.....	189. 24	2, 313. 83	192. 12	2, 316. 71
Other credits: Arrearages to be repaid with construction.....		2, 518. 90		2, 518. 90
Totals.....	10, 865. 88	177, 827. 65	10, 738. 04	177, 483. 63
Results: Deficit.....	604. 06	30, 522. 80	95. 90	37, 245. 04

¹ Reconciliation: Net cost to date, twenty-second annual report..... \$4, 248, 361. 84
 Plus miscellaneous revenues to June 30, 1923..... \$39, 803. 41

Less operation and maintenance arrearages, June 30, 1923..... 2, 518. 90
 Cost and adjustments and undistributed clearing, June 30, 1923..... 24, 303. 25
 Operation and maintenance prior to public notice June 30, 1923 (net)..... 91, 608. 68
 118, 430. 83
 78, 627. 42

Construction cost to June 30, 1923..... 4, 169, 734. 42
 Actual cost fiscal year 1924..... 170, 278. 67
 Construction cost to June 30, 1924 (G. L. 60, 61, and 62)..... 4, 340, 013. 09

² Contra.

Status of current accounts receivable as of June 30, 1924

	Due		Collected				Uncollected June 30, 1924
	Fiscal year 1924	To June 30, 1924	Cash		Other credits		
			Fiscal year 1924	To June 30, 1924	Fiscal year 1924	To June 30, 1924	
Construction:							
Water-right charges	\$6, 220. 91	\$166, 578. 11	\$7, 471. 91	\$148, 372. 27	\$116. 96	\$213. 63	\$17, 992. 21
Contributed funds	274. 69	274. 69	274. 69	274. 69			
Charges paid in advance			1 5. 64	29, 176. 06			
Operation and maintenance:							
Water-right charges (project lands 12,552 acres) ..	1 4, 068. 53	158, 846. 77	9, 258. 42	131, 877. 03	375. 05	3, 245. 55	23, 724. 19
Penalties and interest			875. 41	2, 911. 96	64. 93	64. 96	
Charges paid in advance				10. 55			
Revenues:							
Rentals of irrigating water ..	4, 309. 29	52, 554. 17	4, 750. 93	25, 872. 23	309. 05	539. 74	26, 142. 20
Rentals grazing and farming lands ..	2, 792. 02	34, 124. 83	4, 088. 96	30, 814. 10			3, 310. 73
Subtotal	7, 101. 31	86, 679. 00	8, 839. 89	56, 686. 33	309. 05	539. 74	29, 452. 93
Miscellaneous uncollected							1, 602. 29
Other collections (reclamation fund):							
Construction forfeitures			376. 20	4, 447. 05			
Construction penalties			223. 65	2, 042. 93			
Construction refunds				3, 034. 70			
Operation and maintenance refunds				126. 91			
Miscellaneous			4, 965. 88	86, 955. 93			
Grand total collections			32, 280. 41	465, 916. 41			

¹ Contra.

Uncollected construction water-right charges as of June 30, 1924, 10.8 per cent of total accruals.

Uncollected operation and maintenance charges as of June 30, 1924, 14.9 per cent of total accruals.

LOWER YELLOWSTONE PROJECT, MONTANA-NORTH DAKOTA

Appropriations:

Fiscal year 1924—

Congressional authorizations.....	\$120, 563. 03
Disbursements.....	\$61, 779. 69
Liabilities outstanding.....	5, 791. 19
	67, 570. 88

Unencumbered balance June 30, 1924.....

52, 992. 15

Fiscal year 1925, amount specified in appropriation act.....

95, 000. 00

Investment

	Reclamation fund	Judgments Court of Claims	Increase compensation (net)	Total
Disbursements and net transfers.....	\$4, 085, 645. 60	\$12, 835. 88	\$30, 626. 45	\$4, 129, 107. 93
Less collections.....	322, 083. 67			322, 083. 67
Net investment June 30, 1924.....	3, 763, 561. 93	12, 835. 88	30, 626. 45	3, 807, 024. 26

	Fiscal year 1924	To June 30, 1924
Irrigation works:		
Original construction ¹	\$12,791.48	\$3,088,250.76
Supplemental construction.....		77,306.38
Total construction cost.....	12,791.48	3,165,557.14
Operation and maintenance prior to public notice.....	² 368.86	² 368.86
Operation and maintenance deficits being repaid with construction.....		522,500.05
Less construction revenues.....	2,946.54	3,687,688.33
		44,669.91
To be repaid by water users.....	9,476.08	3,643,018.42
Repayment: Contracts, lower Yellowstone irrigation districts 1 and 2.....	197.60	3,614,301.81
¹ Reconciliation: Net cost to date, twenty-second annual report.....		\$3,632,949.27
Plus:		
Miscellaneous revenues to June 30, 1923.....	\$41,723.37	
Cost adjustments and undistributed clearing accounts, June 30, 1923.....	593.07	
		42,316.44
Less operation and maintenance deficits, June 30, 1923.....		3,675,265.71
		522,500.05
Construction costs to June 30, 1923.....		3,152,765.66
Actual cost fiscal year 1924.....		12,791.48
Construction cost to June 30, 1924.....		3,165,557.14
² Contra.		

	Calendar year 1923	To Dec. 31, 1923	Fiscal year 1924	To June 30, 1924
Operation and maintenance cost.....	\$49,868.35	\$900,702.19	\$64,239.86	\$934,170.59
To repay operation and maintenance cost:				
Charges contracted.....	49,386.03	253,560.56	54,143.35	253,560.56
Penalties.....		2.59		2.59
Discounts (contra).....		4.63		4.63
Miscellaneous revenues.....	482.32	124,643.62	² 1,196.72	124,651.77
Other credits: Operation and maintenance deficits to be repaid with construction.....		522,500.05		522,500.05
Total.....	49,868.35	900,702.19	52,946.63	900,710.34
Results: Deficit.....			11,293.23	33,460.25

Status of current accounts receivable as of June 30, 1924

	Due		Collected			Uncollected June 30, 1924
	Fiscal year 1924	To June 30, 1924	Cash		Other credits	
			Fiscal year 1924	To June 30, 1924	To June 30, 1924	
Construction:						
Water-right charges.....	\$28,287.38	\$69,422.48	\$6,741.12	\$47,876.22		\$21,546.26
Charges paid in advance.....			¹ 197.60			
Operation and maintenance: Irriga- tion districts (58,248 approx. acres).	49,722.45	243,825.25	¹ 11,422.50	50,936.48	\$4.63	192,884.14
Penalties and interest.....				2.59		
Revenues:						
Rentals of irrigating water.....	322.31	123,587.99	199.08	122,068.26		1,519.73
Rentals grazing and farming lands	134.33	3,108.95	140.33	3,003.95		105.00
Miscellaneous uncollected.....						7.70
Other collections (reclamation fund):						
Operation and maintenance re- funds.....				190.56		
Interest and penalties.....			25,066.88	25,081.60		
Miscellaneous.....			2,031.17	72,924.01		
Grand total collections.....			22,558.18	322,083.67		

¹ Contra.

Uncollected construction water-right charges as of June 30, 1924, 31 per cent of total accruals.

Uncollected operation and maintenance charges as of June 30, 1923, 79.1 per cent of total accruals.

NORTH PLATTE PROJECT, NEBRASKA-WYOMING

Appropriations:

Fiscal year 1924—

Congressional authorizations.....	\$1,732,331.06
Disbursements.....	\$1,422,734.47
Liabilities outstanding.....	303,184.89
	<u>1,725,919.36</u>

Unencumbered balance June 30, 1924..... 6,411.70

Fiscal year 1925, amount specified in appropriation act..... 1,450,000.00

Investment

	Reclamation fund	Judgments Court of Claims	Increase of compensa- tion (net)	Total
Disbursements and net transfers.....	\$17,981,333.78	\$26,425.67	\$350,976.37	\$18,358,735.82
Less collections.....	3,931,305.09			3,931,305.09
Net investment June 30, 1924.....	14,050,028.69	26,425.67	350,976.37	14,427,430.73

	Fiscal year 1924	To June 30, 1924
Irrigation works:		
Original construction.....	\$1, 457, 858. 29	\$14, 515, 395. 57
Supplemental construction.....	190, 025. 64	591, 793. 58
Value of works taken over.....		41, 441. 65
Total construction cost ¹	1, 647, 883. 93	15, 148, 630. 80
Operation and maintenance prior to public notice.....	168. 57	496, 558. 09
Operation and maintenance arrearages being repaid with construction.....		82, 413. 95
		\$15, 727, 602. 84
Less:		
Contributed funds.....	10, 386. 15	48, 062. 64
Construction revenues.....	20, 409. 69	103, 634. 20
		151, 696. 84
To be repaid by water users.....	1, 617, 256. 66	
		15, 575, 906. 00
Repayment:		
Water-right contracts (individuals).....	8, 736. 00	7, 836, 665. 78
Water-right contracts (Warren Act).....	380. 00	1, 074, 013. 50
Contract, Northport irrigation district.....	1, 050, 000. 00	1, 050, 000. 00
Special contracts.....	4, 211. 50	39, 271. 25
Total.....	1, 063, 327. 50	9, 999, 950. 53

¹ Reconciliation: Net cost to date twenty-second annual report..... \$14, 011, 574. 27
 Plus miscellaneous revenues to June 30, 1923..... 83, 224. 51

Less:
 Operation and maintenance arrearages, June 30, 1923..... \$82, 413. 95
 Operation and maintenance prior to public notice to June 30, 1923 (net)..... 496, 389. 52
 Cost adjustments and undistributed clearing accounts, June 30, 1923..... 15, 248. 44
 594, 051. 91

Construction cost to June 30, 1923..... 13, 560, 746. 87
 Actual cost, fiscal year 1924..... 1, 647, 883. 93
 Construction cost to June 30, 1924..... 15, 148, 630. 80

	Calendar year 1923	To Dec. 31, 1923	Fiscal year 1924	To June 30, 1924
Operation and maintenance cost.....	\$202, 540. 07	\$1, 914, 408. 17	\$214, 226. 54	\$2, 011, 150. 28
To repay operation and maintenance cost:				
Charges contracted.....	170, 443. 37	1, 936, 678. 35	185, 101. 11	1, 977, 730. 49
Penalties.....	1, 800. 27	26, 151. 95	1, 490. 32	26, 702. 70
Discounts (contra).....	1, 091. 54	32, 391. 26	933. 53	32, 561. 53
Miscellaneous revenues.....	1, 734. 75	21, 735. 36	2, 240. 18	23, 210. 84
Other credits: Operation and maintenance arrearages to be repaid with construction.....		82, 413. 95		82, 413. 95
Total.....	172, 886. 85	2, 034, 588. 35	187, 898. 08	2, 077, 496. 15
Results:				
Excess.....		120, 180. 18		66, 345. 87
Deficit.....	29, 653. 22		26, 328. 46	

Status of current accounts receivable as of June 30, 1924

	Due		Collected				Uncollected June 30, 1924
	Fiscal year 1924	To June 30, 1924	Cash		Other credits		
			Fiscal year 1924	To June 30, 1924	Fiscal year 1924	To June 30, 1924	
Construction:							
Water-right charges	\$402,047.71	\$2,778,032.98	\$57,566.48	\$1,732,646.25	\$663.94	\$34,958.86	\$1,010,427.87
Contributed funds	11,600.00	48,062.64	11,600.00	44,393.76			3,668.88
Total	413,647.71	2,826,095.62	69,166.48	1,777,040.01	663.94	34,958.86	1,014,096.75
Charges paid in advance			163.53	535.60			
Operation and maintenance:							
Water-right charges, project lands (108,010.07 acres)	143,724.24	1,728,815.27	26,365.65	1,162,167.46	1,052.78	42,285.58	524,362.23
Warren Act lands (127,970 approximate acres)	18,628.83	226,167.18	25,823.25	203,044.11	72.49	128.67	22,994.40
Irrigation districts (16,350 approximate acres)	22,748.04	22,748.04					22,748.04
Total	185,101.11	1,977,730.49	52,188.90	1,365,211.57	1,125.27	42,414.25	570,104.67
Penalties and interest			1,308.46	26,098.26	181.86	604.44	
Charges paid in advance			28.23	28.23			
Revenues:							
Rentals of irrigating water	53,741.65	222,583.37	40,340.83	208,596.44	8.00	10.00	13,976.93
Rentals power and light	30,255.10	113,864.58	29,187.79	97,260.43	1,862.29	14,255.59	2,348.56
Rentals grazing and farming lands	2,393.16	83,070.08	3,121.52	77,556.38			5,513.70
Subtotal	86,389.91	419,518.03	72,650.14	383,413.25	1,870.29	14,265.59	21,839.19
Miscellaneous uncollected							9,250.49
Other collections (reclamation fund):							
Construction forfeitures			126.50	6,102.75			
Construction penalties			12,720.11	92,759.06			
Construction refunds				1,440.85			
Operation and maintenance refunds				488.96			
Miscellaneous			40,763.86	278,186.55			
Grand total collections			248,889.15	3,931,305.09			

¹ Contra.

Uncollected construction water-right charges as of June 30, 1924, 36.4 per cent of total accruals.

Uncollected operation and maintenance charges as of June 30, 1924, 28.8 per cent of total accruals.

NEWLANDS PROJECT, NEVADA

Appropriations:

Fiscal year 1924—

Congressional authorizations		\$700,930.12
Disbursements	\$312,695.32	
Liabilities outstanding	36,500.54	
		349,195.86

Unencumbered balance June 30, 1924

351,734.26

Fiscal year 1925, amount specified in appropriation act

400,000.00

Investment

	Reclamation fund	Increase of compensation (net)	Total
Disbursements and net transfers.....	\$8,842,845.25	\$90,006.10	\$8,932,851.35
Less collections.....	1,761,359.32		1,761,359.32
Net investment June 30, 1924.....	7,081,485.93	90,006.10	7,171,492.03

	Fiscal year 1924	To June 30, 1924	
Irrigation works:			
Original construction.....	\$144,286.15	\$6,663,667.33	
Supplemental construction.....	163,859.83	753,955.72	
Value of works taken over.....		37,082.61	
Total construction ¹	308,145.98	7,454,705.66	
Operation and maintenance prior to public notice.....	² 174.28	² 1,354.51	
Operation and maintenance arrearages being repaid with construction.....		2,022.93	
Less:			\$7,455,374.08
Construction revenues.....	14,295.22		172,135.73
To be repaid by water users.....	293,676.48		7,283,238.35
Repayment:			
Water right contracts (individual).....	² 53,357.00	1,964,655.53	
Contract, Truckee-Carson irrigation district.....	3,528.00	623,794.48	
Total.....	² 49,829.00		2,588,450.01

	Calendar year 1923	To Dec. 31, 1923	Fiscal year 1924	To June 30, 1924
Operation and maintenance cost.....	\$109,358.66	\$1,097,887.70	\$118,875.05	\$1,183,380.30
To repay operation and maintenance cost:				
Charges contracted.....	107,589.62	1,011,535.14	110,824.76	1,011,324.02
Penalties.....	1,544.75	12,970.38	4,156.67	15,445.64
Discounts (contra).....	4,475.10	17,844.38	2,106.60	17,893.37
Miscellaneous revenues.....	909.27	18,867.97	856.77	19,125.97
Other credits: Operation and maintenance arrearage to be repaid with construction.....		2,022.93		2,022.93
Total.....	108,568.54	1,027,552.04	113,731.60	1,030,025.19
Result: Deficit.....	790.12	70,335.66	5,143.45	153,355.11

¹ Reconciliation: Net cost to date, twenty-second annual report.....	\$6,960,498.85
Plus:	
Miscellaneous revenues to June 30, 1923.....	\$157,840.51
Operation and maintenance prior to public notice, June 30, 1923 (net).....	1,180.23
	159,020.74
Less:	7,149,519.59
Operation and maintenance arrearages to June 30, 1923.....	2,022.93
Cost adjustments and undistributed clearing accounts, June 30, 1923.....	936.98
	2,959.91
Construction cost to June 30, 1923.....	7,146,559.68
Actual cost, fiscal year 1924.....	308,145.98
Construction cost to June 30, 1924.....	7,454,705.66

² Contra.

Status of current accounts receivable as of June 30, 1924

	Due		Collected				Uncollected June 30, 1924
			Cash		Other credits		
	Fiscal year 1924	To June 30, 1924	Fiscal year 1924	To June 30, 1924	Fiscal year 1924	To June 30, 1924	
Construction:							
Water-right charges.....	\$46,821.92	\$592,191.97	\$30,386.45	545,162.11	\$783.95	\$6,788.90	\$40,240.96
Charges paid in advance.....	-----	-----	67.17	1,387.07	-----	-----	-----
Operation and maintenance:							
Water-right charges.....	108,690.33	913,689.59	87,666.85	776,648.80	4,399.43	28,277.55	108,763.24
Penalties and interest.....	-----	-----	3,833.75	14,770.82	322.92	674.82	-----
Charges paid in advance.....	-----	-----	22.47	605.40	60.16	60.16	-----
Revenues:							
Rentals of irrigating water.....	2,425.05	19,361.27	642.20	17,558.92	1,761.85	1,761.85	40.50
Rentals of power and light.....	18,476.81	202,837.37	18,646.66	176,159.07	18.00	25,505.75	1,172.55
Rentals of grazing and farming lands.....	5,041.78	29,626.40	3,571.28	27,709.90	-----	-----	1,916.50
Subtotal.....	25,943.64	251,825.04	22,860.14	221,427.89	1,779.85	27,267.60	3,129.55
Miscellaneous uncollected.....	-----	-----	-----	-----	-----	-----	628.09
Other collections (reclamation fund):							
Construction forfeitures.....	-----	-----	492.00	4,825.60	-----	-----	-----
Construction penalties.....	-----	-----	1,580.22	7,351.55	-----	-----	-----
Construction refunds.....	-----	-----	89.55	384.55	-----	-----	-----
Operation and maintenance refunds.....	-----	-----	-----	111.96	-----	-----	-----
Miscellaneous.....	-----	-----	5,300.46	188,683.57	-----	-----	-----
Grand total collections.....	-----	-----	152,254.12	1,761,359.32	-----	-----	-----

¹ Contra.

Uncollected construction water-right charges as of June 30, 1924, 6.8 per cent of total accruals.

Uncollected operation and maintenance charges as of June 30, 1924, 11.9 per cent of total accruals.

CARLSBAD PROJECT, NEW MEXICO

Appropriations:

Fiscal year 1924—

Congressional authorizations.....	\$86,347.84
Disbursements.....	\$40,365.23
Liabilities outstanding.....	1,131.84
	41,497.07

Unencumbered balance June 30, 1924.....

44,850.77

Fiscal year 1925, amount specified in appropriation act.....

50,000.00

Investment

	Reclamation fund	Increase of compensation (net)	Total
Disbursements and net transfers.....	\$1,961,653.26	\$29,972.09	\$1,991,625.35
Less collections.....	1,055,814.87	-----	1,055,814.87
Net investment June 30, 1924.....	905,838.39	29,972.09	935,810.48

	Fiscal year 1924	To June 30, 1924
Irrigation works:		
Original construction ¹		\$1, 118, 696. 90
Operation and maintenance prior to public notice (net).....	² \$1, 190. 27	² 11, 705. 28
Operation and maintenance arrearages being repaid with construction.....		1, 934. 00
		\$1, 408, 925. 62
Less:		
Contributed funds.....		7, 980. 06
Construction revenues.....	994. 19	15, 181. 29
		23, 161. 35
To be repaid by water users.....	² 2, 184. 46	1, 385, 764. 27
Repayment:		
Water-right contracts (individuals).....		1, 423, 892. 75

	Calendar year 1923	To Dec. 31, 1923	Fiscal year 1924	To June 30, 1924
Operation and maintenance cost.....	\$38, 741. 00	\$514, 171. 30	\$42, 529. 45	\$538, 537. 21
To repay operation and maintenance cost:				
Charges contracted.....	54, 505. 14	502, 241. 38	54, 505. 14	502, 241. 38
Penalties.....	6, 653. 82	16, 565. 61	7, 100. 50	21, 315. 07
Discounts (contra).....	1, 398. 27	7, 315. 48	1, 619. 33	7, 749. 23
Miscellaneous revenues.....	526. 18	12, 711. 08	2, 014. 42	14, 297. 62
Other credits: Operation and maintenance arrearages being repaid with construction.....		1, 934. 00		1, 934. 00
Total.....	60, 286. 87	526, 136. 59	62, 000. 73	532, 038. 84
Results:				
Excess.....	21, 542. 87	11, 965. 29	19, 471. 28	
Deficit.....				6, 498. 37

¹ Reconciliation: Net cost to date, twenty-second annual report..... \$1, 395, 928. 79
 Plus miscellaneous revenues to June 30, 1923..... \$24, 702. 11
 Less operation and maintenance arrearages, June 30, 1923..... 1, 934. 00
 22, 768. 11

Construction cost to June 30, 1923..... 1, 418, 696. 90
 Construction cost to June 30, 1924..... 1, 418, 696. 90

² Contra.

Status of current accounts receivable as of June 30, 1924

	Due		Collected				Uncollected June 30, 1924
	Fiscal year 1924	To June 30, 1924	Cash		Other credits		
			Fiscal year 1924	To June 30, 1924	Fiscal year 1924	To June 30, 1924	
Construction:							
Water-right charges.....	\$57,538.92	\$475,435.19	\$69,700.37	\$452,168.10			\$23,267.09
Contributed funds.....		7,980.06		7,980.06			
Total.....	57,538.92	483,415.25	69,700.37	460,148.16			23,267.09
Charges paid in advance.....			1,400.44	729.11			
Operation and maintenance:							
Water-right charges, project lands (25,040 acres).....	54,505.14	502,241.38	78,758.73	470,139.33	\$1,619.33	\$7,749.23	24,352.82
Penalties and interest.....			7,100.50	21,315.07			
Revenues:							
Rentals of irrigating water.....	2,691.32	21,933.01	2,691.32	21,933.01			
Rentals of grazing and farming lands.....	1,470.31	13,166.24	1,470.31	12,631.80			534.44
Subtotal.....	4,161.63	35,099.25	4,161.63	34,564.81			534.44
Miscellaneous uncollected.....							171.73
Other collections (reclamation fund):							
Construction forfeitures.....				269.70			
Construction penalties.....			5,291.13	24,127.13			
Miscellaneous.....			1,732.00	44,521.56			
Grand total collections.....			166,343.92	1,055,814.87			

¹ Contra.

Uncollected construction water-right charges as of June 30, 1924, 4.89 per cent of total accruals.

Uncollected operation and maintenance charges as of June 30, 1924, 4.85 per cent of total accruals.

RIO GRANDE PROJECT, NEW MEXICO-TEXAS

Appropriations:

Fiscal year 1924—

Congressional authorizations.....	\$1,042,478.07
Disbursements.....	\$908,670.90
Liabilities outstanding.....	92,124.07
	1,000,794.97

Unencumbered balance June 30, 1924..... 41,683.10

Fiscal year 1925, amount specified in appropriation act..... 706,000.00

Investment

	Reclamation fund	Rio Grande Dam	Increase of compensation (net)	Total
Disbursements and net transfers.....	\$14,215,605.91	\$1,000,000.00	\$438,671.11	\$15,654,277.02
Less collections.....	2,553,592.76			2,553,592.76
Net investment June 30, 1924.....	11,662,013.15	1,000,000.00	438,671.11	13,100,684.26

	Fiscal year 1924	To June 30, 1924
Irrigation works:		
Original construction ¹	\$908, 013. 19	\$13, 334, 707. 64
Operation and maintenance prior to public notice (net)	² 8, 927. 68	² 255, 185. 72
		\$13, 079, 521. 92
Less:		
Construction revenues	1, 659. 56	35, 892. 96
Nonreimbursable: Rio Grande Dam appropriation		1, 000, 000. 00
		1, 035, 892. 96
To be repaid by water users	897, 425. 95	12, 043, 628. 96
Repayment:		
Contracts, Elephant Butte irrigation district and El Paso water improvement district No. 1		7, 650, 000. 00

	Calendar year 1923	To Dec. 31, 1923	Fiscal year 1924	To June 30, 1924
Operation and maintenance cost	\$193, 523. 53	\$641, 123. 57	\$216, 825. 18	\$765, 791. 30
To repay operation and maintenance cost:				
Charges contracted	198, 345. 34	643, 927. 05	194, 783. 41	645, 368. 91
Penalties	² 2, 864. 84	1, 682. 96	² 78. 62	1, 426. 46
Discounts (contra)		4, 486. 44		4, 486. 44
Miscellaneous revenues	345. 64	645. 64	45. 64	645. 64
Total	195, 826. 14	641, 769. 21	194, 750. 43	642, 954. 57
Results:				
Excess	2, 302. 61	645. 64		
Deficit			22, 074. 75	122, 836. 73

¹ Reconciliation: Net cost to date, twenty-second annual report \$12, 146, 114. 43

Plus:

Miscellaneous revenues to June 30, 1923	\$34, 233. 40	
Operation and maintenance prior to public notice June 30, 1923	246, 258. 04	
Cost adjustments and undistributed clearing accounts, June 30, 1923	88. 58	
		280, 580. 02

Construction cost to June 30, 1923 12, 426, 694. 45

Actual cost, fiscal year 1924 908, 013. 19

Construction cost to June 30, 1924 13, 334, 707. 64

² Contra.

Status of current accounts receivable as of June 30, 1924

	Due		Collected				Un- collected June 30, 1924
			Cash		Other credits		
	Fiscal year 1924	To June 30, 1924	Fiscal year 1924	To June 30, 1924	Fiscal year 1924	To June 30, 1924	
Construction: Water- right charges.....	\$198,514.80	\$275,014.80	\$198,523.80	\$275,014.80			
Operation and mainten- ance:							
Irrigation districts (approximately 150,000 acres).....	208,234.00	597,312.40	201,102.44	585,694.40		\$4,486.44	\$7,131.56
Penalties and interest.....			178.62	1,426.46			
Charges paid in ad- vance.....			230.16	875.52			
Revenues:							
Rentals of irrigating water.....	8,927.68	1,118,403.12	5,369.05	1,080,816.31			37,586.81
Rentals of power and light.....		2,243.33		2,243.33			
Rentals of grazing and farm lands.....	151.50	1,951.70	166.50	1,951.70			
Subtotal.....	9,079.18	1,122,598.15	5,535.55	1,085,011.34			37,586.81
Miscellaneous uncollected							13,829.12
Other collections (recla- mation fund):							
Construction penal- ties.....			942.96	1,873.55			
Operation and main- tenance refunds.....				333.52			
Miscellaneous.....			30,144.63	603,363.17			
Grand total collec- tions.....			436,400.92	2,553,592.76			

¹ Contra.

Uncollected operation and maintenance charges as of June 30, 1924, 1.2 per cent of total accruals.

WILLISTON PROJECT, NORTH DAKOTA

Appropriations:

Fiscal year 1924—

Congressional authorizations.....		\$148,607.40
Disbursements.....	\$94,376.91	
Liabilities outstanding.....	5,292.21	99,669.12

Unencumbered balance June 30, 1924..... 48,938.28

Fiscal year 1925, amount specified in appropriation act..... 100,000.00

Investment

	Reclamation fund	Increase of compensation (net)	Total
Disbursements and net transfers.....	\$1,285,546.27	\$25,194.28	\$1,310,740.55
Less collections.....	457,976.62		457,976.62
Net investment June 30, 1924.....	827,569.65	25,194.28	852,763.93

	Fiscal year 1924	To June 30, 1924
Irrigation works:		
Original construction.....		\$470,798.69
Supplemental construction.....	\$27,984.18	27,984.18
Total construction cost ¹	27,984.18	498,782.87
Operation and maintenance prior to public notice (net).....		² 165.00
Operation and maintenance deficits and arrearages being repaid with construction.....	168,471.56	168,471.56
Less construction revenues.....	² 445.71	\$667,089.43
To be repaid by water users.....	196,901.45	10,080.80
Repayment: Contract, Williston irrigation district.....	198,471.56	657,008.63
		489,275.30

See footnotes ¹ and ² on page 143.

	Calendar year 1923	To Dec. 31, 1923	Fiscal year 1924	To June 30, 1924
Operation and maintenance cost.....	\$75,500.92	\$765,537.70	\$70,374.74	\$797,309.24
To repay operation and maintenance cost:				
Charges contracted.....	² 135,572.16	26,677.75	² 131,672.07	26,677.75
Penalties.....		1,918.76		1,918.76
Miscellaneous revenues.....	45,699.97	392,900.88	45,407.34	415,097.84
Other credits:				
Operation and maintenance deficits and arrears being repaid with construction	168,471.56	168,471.56	168,471.56	168,471.56
Operation and maintenance deficit written off.....		178,667.20		178,667.20
Total.....	78,599.37	768,636.15	82,206.83	790,833.11
Result:				
Excess.....	3,098.45	3,098.45	11,832.09	
Deficit.....				6,476.13

¹ Reconciliation: Net cost to date, twenty-second annual report..... \$460,107.18

Plus:

Miscellaneous revenues to June 30, 1923..... \$10,526.51
 Operation and maintenance prior to public notice, June 30, 1923 (net)..... 165.00
 10,691.51

Construction cost to June 30, 1924..... 470,798.69
 Actual cost, fiscal year 1924..... 27,984.18

Construction cost to June 30, 1924..... 498,782.87

² Contra.

Status of current accounts receivable as of June 30, 1924

	Due		Collected		Uncol- lected June 30, 1924
	Fiscal year 1924	To June 30, 1924	Cash		
			Fiscal year 1924	To June 30, 1924	
Construction charges paid in advance.....				\$8, 250. 63	
Operation and maintenance irrigation dis- tricts (6,587.4 approximate acres).....	1 \$45, 242. 55	\$26, 677. 75		26, 677. 75	
Penalties and interest.....				1, 918. 76	
Revenues:					
Rentals of irrigating water.....		2, 117. 28		2, 117. 28	
Rentals, power and light.....	44, 288. 70	409, 936. 20	\$44, 547. 00	406, 680. 00	\$3, 256. 20
Rentals, grazing and farming lands.....		249. 98		249. 98	
Subtotal.....	44, 288. 70	412, 303. 46	44, 547. 00	409, 047. 26	3, 256. 20
Miscellaneous uncollected.....					7. 55
Other collections (reclamation fund):				655. 32	
Construction forfeitures.....			979. 59	11, 426. 90	
Miscellaneous.....					
Grand total collections.....			45, 526. 59	457, 976. 62	

¹ Contra.

UMATILLA PROJECT, OREGON

Appropriations:

Fiscal year 1924—
 Congressional authorizations..... \$1,005,827.43
 Disbursements..... \$736,528.86
 Liabilities outstanding..... 199,382.43
 935,911.29

Unencumbered balance June 30, 1924..... 69,916.14

Fiscal year 1925, amount specified in appropriation act..... 940,000.00

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Investment

	Reclamation fund	Increase of compensation (net)	Total
Disbursements and net transfers.....	\$4,291,898.47	\$47,224.80	\$4,339,123.27
Less collections.....	910,352.79		910,352.79
Net investment June 30, 1924.....	3,381,545.68	47,224.80	3,428,770.48

	Fiscal year 1924	To June 30, 1924
Irrigation works:		
Original construction.....	\$541,384.42	\$2,918,869.51
Supplemental construction.....	134,842.18	461,862.41
Total construction cost ¹	676,226.60	3,380,731.92
Operation and maintenance deficits and arrearages being repaid with construction.....		190,627.95
Contributed funds.....	1,000.00	1,000.00
Construction revenues.....	644.00	21,775.17
		22,775.17
To be repaid by water users.....	674,582.60	3,548,584.70
Repayment:		
Water-right contracts (individual).....		9,897.00
Water-right contracts (Warren Act).....	695,000.00	699,800.00
Contracts, Hermiston irrigation district and West Extension irrigation district.....		2,690,376.97
Total.....	695,000.00	3,400,073.97

	Calendar year 1923	To Dec. 31, 1923	Fiscal year 1924	To June 30, 1924
Operation and maintenance cost.....	\$37,600.67	\$588,429.30	\$39,968.05	\$610,023.03
To repay operation and maintenance cost:				
Charges contracted.....	36,688.44	368,206.39	36,688.44	368,206.39
Penalties.....	² 1,162.23	6,347.57	23.84	6,371.41
Discounts (contra).....	8.87	3,286.43	7.74	3,294.17
Miscellaneous revenues.....	1,285.11	36,509.09	1,688.30	37,626.56
Other credits: Operation and maintenance deficits and arrearages being repaid with construction.....		190,627.95		190,627.95
Total.....	36,802.45	598,404.57	38,392.84	599,538.14
Results:				
Excess.....		9,975.27		
Deficit.....	798.22		1,575.21	10,484.89

¹ Reconciliation: Net cost to date, twenty-second annual report..... \$2,874,027.84
 Plus miscellaneous revenues to June 30, 1923..... 21,131.17

Less operation and maintenance deficits and arrearages:

 June 30, 1923..... \$190,627.95
 Cost adjustments and undistributed clearing accounts, June 30, 1923..... 25.74
 190,653.69

Construction cost to June 30, 1923..... 2,704,505.32
 Actual cost, fiscal year 1924..... 676,226.60

Construction cost to June 30, 1924..... 3,380,731.92

² Contra.

Status of current accounts receivable as of June 30, 1924

	Due		Collected				Uncollected June 30, 1924
	Fiscal year 1924	To June 30, 1924	Cash		Other credits		
			Fiscal year 1924	To June 30, 1924	Fiscal year 1924	To June 30, 1924	
Construction:							
Water-right charges.....	\$76, 150. 17	\$482, 782. 68	\$24, 809. 24	\$381, 408. 62			\$101, 374. 06
Contributed funds.....	1, 000. 00	1, 000. 00	1, 000. 00	1, 000. 00			
Totals.....	77, 150. 17	483, 782. 68	25, 809. 24	382, 408. 62			101, 374. 06
Charges paid in advance.....			1 2, 190. 43	15, 129. 95			
Operation and maintenance:							
Water-right charges pro-							
ject lands (111 acres).....	236. 38	2, 003. 92	125. 79	1, 580. 29	\$3. 59	\$102. 63	321. 00
Warren Act lands (120							
acres).....	136. 50	611. 45	78. 85	510. 94	4. 15	24. 01	76. 50
Irrigation districts (24,356							
acres).....	42, 149. 66	319, 768. 36	38, 750. 93	281, 778. 32		3, 167. 53	34, 822. 51
Total.....	42, 522. 54	322, 383. 73	38, 955. 57	283, 869. 55	7. 74	3, 294. 17	35, 220. 01
Penalties and interest.....			23. 84	6, 371. 41			
Charges paid in advance.....				390. 00			
Revenues:							
Rentals of irrigation							
water.....	1, 207. 80	33, 308. 04	1, 207. 80	33, 308. 04			
Rentals of grazing lands.....	522. 05	2, 101. 55	522. 05	2, 051. 55			50. 00
Subtotal.....	1, 729. 85	35, 409. 59	1, 729. 85	35, 359. 59			50. 00
Miscellaneous uncollected.....							627. 77
Other collections (reclama-							
tion fund):							
Construction forfeitures.....				6, 701. 14			
Construction penalties.....			7, 911. 77	17, 759. 60			
Construction refunds.....				63. 00			
Operation and mainten-				9. 55			
ance refunds.....							
Miscellaneous.....			13, 848. 34	162, 290. 38			
Grand total collections.....			86, 088. 18	910, 352. 79			

¹ Contra.

Uncollected construction water right charges as of June 30, 1924, 21 per cent of total accruals.

Uncollected operation and maintenance charges as of June 30, 1924, 10.9 per cent of total accruals.

KLAMATH PROJECT, OREGON-CALIFORNIA

Appropriations:

Fiscal year 1924—		
Congressional authorizations.....		\$735, 742. 58
Disbursements.....	\$345, 528. 83	
Liabilities outstanding.....	246, 932. 66	
		592, 461. 49
Unencumbered balance June 30, 1924.....		143, 281. 09
Fiscal year 1925—amount specified in appropriation act.....		695, 090. 00

Investment

	Reclamation fund	Increase of compensation (net)	Total
Disbursements and net transfers.....	\$5, 223, 646. 69	\$72, 415. 97	\$5, 296, 062. 66
Less collections.....	1, 392, 048. 08		1, 392, 048. 08
Net investment June 30, 1924.....	3, 831, 598. 61	72, 415. 97	3, 904, 014. 58

	Fiscal year 1924	To June 30, 1924
Irrigation works:		
Original construction	\$381, 246. 14	\$3, 914, 292. 33
Supplemental construction	12, 605. 69	545, 873. 53
Value of works taken over		6, 705. 07
Total construction cost ¹	393, 851. 83	\$4, 466, 870. 93
Operation and maintenance prior to public notice (net)	1, 719. 81	62, 152. 27
Operation and maintenance arrearages being repaid with construction		3, 712. 03
Less construction revenues	16, 405. 10	4, 532, 735. 23
To be repaid by water users	379, 166. 54	177, 443. 41
Repayment:		4, 355, 291. 82
Water-right contracts (individual)	² 15, 011. 50	262, 491. 20
Water-right contracts (Warren Act)		457, 981. 24
Contracts with irrigation districts	693, 489. 71	2, 990, 376. 76
Special contracts	120, 620. 00	254, 508. 40
Total	799, 098. 21	3, 965, 357. 60

	Calendar year 1923	To Dec. 31, 1923	Fiscal Year 1924	To June 30, 1924
Operation and maintenance cost	\$58, 540. 37	\$618, 608. 28	\$64, 086. 84	\$657, 791. 30
To repay operation and maintenance cost:				
Charges contracted	58, 875. 53	618, 032. 45	56, 475. 22	615, 682. 14
Penalties	72. 44	2, 730. 07	77. 61	2, 769. 51
Discounts (contra)	93. 22	4, 513. 42	72. 00	4, 537. 65
Miscellaneous revenues	957. 08	12, 404. 01	367. 68	11, 803. 96
Other credits: Operation and maintenance arrearages being repaid with construction		3, 712. 03		3, 712. 03
	59, 811. 83	632, 365. 14	56, 848. 51	629, 379. 99
Results:				
Excess	1, 271. 46	13, 756. 86		
Deficit			7, 238. 33	28, 411. 31

¹ Reconciliation: Net cost to date, twenty-second annual report \$3, 978, 175. 37
Plus miscellaneous revenues to June 30, 1923 \$161, 038. 31

Less:
Operation and maintenance arrearages, June 30, 1923 3, 712. 03
Cost adjustments and undistributed clearing, June 30, 1923 2, 050. 45
Operation and maintenance prior to public notice, June 30, 1923 (net) 60, 432. 46
66, 194. 94
94, 843. 37

Construction cost to June 30, 1923 4, 073, 019. 10
Actual cost fiscal year 1924 393, 851. 83

Construction cost to June 30, 1924 (G. L. 60, 61, and 62) 4, 466, 870. 93

² Contra.

Status of current accounts receivable as of June 30, 1924

	Due		Collected				Uncollected June 30, 1924
	Fiscal year 1924	To June 30, 1924	Cash		Other credits		
			Fiscal year 1924	To June 30, 1924	Fiscal year 1924	To June 30, 1924	
Construction:							
Water-right charges.....	\$54,597.45	\$622,409.03	\$52,885.68	\$590,155.69			\$32,253.34
Charges paid in advance.....			4,625.86	5,048.57			
Operation and maintenance:							
Water-right charges, project lands (individual contracts) (3,492 acres)	2,595.89	15,826.98	2,753.38	12,744.02	\$72.00	\$314.64	2,768.32
Warren Act lands (9,834.8 approximate acres)	754.83	2,847.15	700.96	2,640.64			206.51
Irrigation districts (41, 485.9 approximate acres)	52,912.25	530,295.76	74,342.85	473,843.99		29,816.96	26,634.81
Other lands (5,000 ap- proximate acres)	¹ 200.00						
Total.....	56,062.97	548,969.89	77,797.19	489,228.65	72.00	30,131.60	29,609.64
Penalties and interest.....			77.61	2,769.51			
Charges paid in advance.....			14.38	70.19			
Revenues:							
Rentals of irrigating water.....	967.68	43,981.31	1,254.60	43,792.43			188.88
Rentals power and light ¹	² 537.65	7,697.18	¹ 537.65	7,697.18			
Grazing and farming lands.....	18,358.99	176,765.15	18,182.99	176,145.15	\$4.00	\$4.00	536.00
Subtotal.....	18,789.02	228,443.64	18,899.94	227,634.76	\$4.00	\$4.00	724.88
Miscellaneous uncollected.....							5,054.31
Other collections (reclama- tion fund):							
Construction forfeitures.....			5,036.90	5,045.90			
Construction penalties.....			51.25	2,321.27			
Construction refunds.....			895.97	2,467.65			
Operation and mainte- nance penalties (dis- trict contracts)			1,857.63	2,308.26			
Operation and mainte- nance refunds.....				60.75			
Miscellaneous.....			5,405.99	64,936.88			
Grand total collections.....			167,548.40	1,392,048.08			

¹ Accruals and collections for the fiscal year, \$87, refund \$624.65.

² Contra.

Uncollected construction water-right charges as of June 30, 1924, 5.2 per cent of total accruals.

Uncollected operations and maintenance charges as of June 30, 1924, 5.4 per cent of total accruals.

BELLE FOURCHE PROJECT, SOUTH DAKOTA

Appropriations:

Fiscal year 1924—

Congressional authorizations.....	\$92,301.01
Disbursements.....	\$51,313.04
Liabilities outstanding.....	5,930.33
	57,243.37

Unencumbered balance June 30, 1924..... 35,057.64

Fiscal year 1925, amount specified in appropriation act..... 185,000.00

Investment

	Reclamation fund	Judgments Court of Claims	Increase of compensa- tion (net)	Total
Disbursements and net transfers.....	\$4,586,507.94	\$37,170.22	\$49,755.89	\$4,673,434.05
Less collections.....	1,084,471.75			1,084,471.75
Net investment June 30, 1924.....	3,502,036.19	37,170.22	49,755.89	3,588,962.30

	Fiscal year 1924	To June 30, 1924
Irrigation works:		
Original construction.....		\$3, 531, 454. 53
Supplemental construction.....		34, 669. 88
Total construction cost ¹		3, 566, 124. 41
Operation and maintenance prior to public notice (net).....		² 1, 989. 03
Operation and maintenance deficits and arrearages being repaid with construction.....	\$486, 044. 89	506, 436. 99
Less:		\$4, 070, 572. 37
Construction revenues.....	² 525. 00	16, 565. 35
To be repaid by water users.....	486, 569. 89	4, 054, 007. 02
Repayment: Contract, Belle Fourche irrigation district.....	1, 747, 999. 03	4, 345, 277. 42

	Calendar year 1923	To Dec. 31, 1923	Fiscal year 1924	To June 30, 1924
Operation and maintenance cost.....	\$63, 279. 27	\$1, 014, 749. 94	\$64, 186. 91	\$1, 044, 205. 89
To repay operation and maintenance cost:				
Charges contracted.....	² 307, 450. 83	563, 721. 89	² 307, 141. 38	563, 721. 89
Penalties.....	16, 458. 44	31, 955. 32	16, 739. 16	32, 385. 57
Discounts (contra).....	² 2, 885. 86	9, 241. 55	² 3, 069. 32	9, 241. 55
Miscellaneous revenues.....	2, 090. 54	10, 691. 20	2, 422. 92	11, 467. 93
Other credits: Operation and maintenance deficits and arrearages being repaid as con- struction.....	486, 044. 89	506, 436. 99	486, 044. 89	506, 436. 99
Total.....	200, 028. 90	1, 103, 563. 85	201, 134. 91	1, 104, 770. 83
Results: Excess.....	136, 749. 63	88, 813. 91	136, 948. 00	60, 564. 94

¹ Reconciliation: Net cost to date, twenty-second annual report..... \$3, 567, 437. 13

Plus:

Miscellaneous revenues to June 30, 1923..... \$17, 090. 35

Operation and maintenance prior to public notice June 30, 1923 (net)..... 1, 989. 03

19, 079. 38

Less operation and maintenance deficits and arrearages, June 30, 1923..... 3, 586, 516. 51
20, 392. 10

Construction cost, June 30, 1923..... 3, 566, 124. 41

Construction cost, June 30, 1924..... 3, 566, 124. 41

² Contra.

Status of current accounts receivable as of June 30, 1924

	Due		Collected				Un- collected June 30, 1924
	Fiscal year 1924	To June 30, 1924	Cash		Other credits		
			Fiscal year 1924	To June 30, 1924	Fiscal year 1924	To June 30, 1924	
Construction:							
Water-right charges ¹	² \$289,336. 90	\$459, 866. 70	² \$51,914.23	\$425, 758. 16	\$47. 42	\$266. 57	\$33, 841. 97
Charges paid in advance.....			54, 574. 47	54, 962. 83			
Operation and maintenance:							
Water-right charges, irrigation districts (approximately 76,591 acres) ¹	² 345, 290. 44	525, 572. 83	² 52,919. 53	460, 570. 52	² 3, 075. 82	9, 376. 82	55, 625. 49
Penalties and interest.....			787. 58	16, 345. 42	14, 001. 33	14, 089. 90	1, 950. 25
Charges paid in advance.....			54, 252. 84	54, 292. 57			
Revenues:							
Rentals of irrigating water.....	304. 72	5, 364. 82	286. 92	5, 197. 02	17. 80	17. 80	150. 00
Rentals, grazing and farming lands.....	323. 17	641. 94	319. 17	637. 94			4. 00
Subtotal.....	627. 89	6, 006. 76	606. 09	5, 834. 96	17. 80	17. 80	154. 00
Miscellaneous uncollected Other collections (reclama- tion fund):							4, 311. 90
Construction forfeit- ures.....				1, 116. 10			
Construction penalties.....			² 1, 294. 06	15, 164. 54			
Construction refunds.....				423. 42			
Operation and mainte- nance refunds.....				384. 97			
Miscellaneous.....			1, 894. 83	49, 618. 26			
Grand total collec- tions.....			5, 987. 99	1, 084, 471. 75			

¹ Adjustments on account of contract with irrigation district.² Contra.

Uncollected construction water-right charges as of June 30, 1924, 7.4 per cent of total accruals.

Uncollected operation and maintenance charges as of June 30, 1924, 10.6 per cent of total accruals.

STRAWBERRY VALLEY PROJECT, UTAH

Appropriations:

Fiscal year 1924—

Congressional authorizations.....	\$92, 858. 05
Disbursements.....	\$37, 920. 23
Liabilities outstanding.....	1, 425. 33

39, 345. 56

Unencumbered balance June 30, 1924.....

53, 512. 49

Fiscal year 1925, amount specified in appropriation act.....

40, 000. 00

Investment

	Reclamation fund	Judgments, Court of Claims	Increase of compensa- tion (net)	Total
Disbursements and net transfers.....	\$4, 191, 861. 51	\$440. 00	\$34, 495. 26	\$4, 226, 796. 77
Less collections.....	1, 288, 559. 51			1, 288, 559. 51
Net investment June 30, 1924.....	2, 903, 302. 00	440. 00	34, 495. 26	2, 938, 237. 26

	Fiscal year 1924	To June 30, 1924
Irrigation works:		
Original construction ¹		\$3,491,237.58
Operation and maintenance prior to public notice (net).....		12,111.90
		\$3,503,349.48
Less: Construction revenues.....	\$8,393.52	44,775.60
To be repaid by water users.....	² 8,393.52	3,458,574.48
Repayment:		
Water-right contracts (individual).....	7,156.33	2,441,725.70
Water-right contracts (Warren Act).....		83,700.00
Contracts, Springville and Mapleton irrigation districts.....		460,650.00
Special contracts.....		105,180.00
Total.....	7,156.33	3,091,255.70

	Calendar year 1923	To Dec. 31, 1923	Fiscal year 1924	To June 30, 1924
Operation and maintenance cost.....	\$21,428.79	\$373,277.38	\$22,770.51	\$385,538.40
To repay operation and maintenance cost:				
Charges contracted.....	94,128.43	371,265.62	18,432.60	370,180.62
Penalties.....	1,230.06	3,472.21	1,129.59	3,918.84
Discounts (contra).....	1,284.86	9,279.89	1,218.76	9,572.85
Miscellaneous revenues.....	336.27	10,682.82	608.36	11,121.60
Total.....	94,409.90	376,140.76	18,951.79	375,648.21
Results:				
Excess.....	72,981.11	2,863.38		
Deficit.....			3,818.72	9,890.19

¹ Reconciliation: Net cost to date, twenty-second annual report.....	\$3,466,968.00
Plus: Miscellaneous revenues to June 30, 1923.....	\$36,381.48
Less: Operation and maintenance prior to public notice June 30, 1923 (net).....	12,111.90
Construction cost to June 30, 1923.....	3,491,237.58
Construction cost to June 30, 1924.....	3,491,237.58

² Contra.

Status of current accounts receivable as of June 30, 1924

	Due		Collected				Uncollected June 30, 1924
			Cash		Other credits		
	Fiscal year 1924	June 30, 1924	Fiscal year 1924	To June 30, 1924	Fiscal year 1924	To June 30, 1924	
Construction:							
Water-right charges.....	\$133, 553. 90	\$609, 899. 37	\$83, 399. 85	\$479, 796. 61			\$130, 102. 76
Charges paid in advance.....			1 175. 41	10. 71			
Operation and maintenance:							
Water-right charges project lands (31, 974.43 acres).....	34, 464. 83	273, 742. 61	24, 707. 34	228, 928. 55	863. 89	8, 512. 73	36, 301. 33
Warren Act lands (approximately 2,740.65 acres).....	769. 44	5, 982. 35	361. 77	5, 016. 61	12. 27	181. 24	784. 50
Irrigation districts (approximately 10,000 acres).....	5, 745. 00	32, 991. 25	5, 457. 75	32, 344. 94	287. 25	646. 31	
Other lands (approximately 2,835 acres).....	1, 107. 00	6, 507. 25	1, 051. 65	6, 274. 68	55. 35	232. 57	
Total.....	42, 086. 27	319, 223. 46	31, 578. 51	272, 564. 78	1, 218. 76	9, 572. 85	37, 085. 83
Penalties and interest.....			1, 129. 59	3, 918. 84			
Charges paid in advance.....			4. 32	4. 36			
Revenues:							
Rentals of irrigating water.....	175. 25	8, 563. 64	175. 25	8, 563. 64			
Rentals of power and light.....	24, 460. 76	151, 509. 65	24, 751. 30	149, 961. 72			1, 547. 93
Rentals of grazing and farming lands.....	15, 499. 20	151, 280. 36	15, 499. 20	151, 280. 36			
Subtotal.....	40, 135. 21	311, 353. 65	40, 425. 75	309, 805. 72			1, 547. 93
Miscellaneous uncollected							87. 13
Other collections (reclamation fund):							
Construction forfeitures.....				20. 00			
Construction penalties.....			3, 366. 64	9, 746. 24			
Operation and maintenance refunds.....				36. 48			
Miscellaneous.....			509. 51	212, 655. 77			
Grand total collections.....			160, 238. 76	1, 288, 559. 51			

¹ Contra.

Uncollected construction water right charges as of June 30, 1924, 21.3 per cent of total accruals..

Uncollected operation and maintenance charges as of June 30, 1924, 11.6 per cent of total accruals.

OKANOGAN PROJECT, WASHINGTON

Appropriations:

Fiscal year 1924—

Congressional authorizations.....	\$69, 814. 56
Disbursements.....	\$51, 364. 69
Liabilities outstanding.....	5, 429. 31
	56, 794. 00

Unencumbered balance June 30, 1924..... 13, 020. 56

Fiscal year 1925, amount specified in appropriation act..... 70, 000. 00

Investment

	Reclamation fund	Increase of compensation (net)	Total
Disbursements and net transfers.....	\$1,835,543.33	\$47,757.41	\$1,883,300.74
Less collections.....	488,293.31		488,293.31
Net investment June 30, 1924.....	1,347,250.02	47,757.41	1,395,007.43

	Fiscal year 1924	To June 30, 1924
Irrigation works:		
Original construction.....		\$841,536.61
Supplemental construction.....	\$10,335.16	608,012.03
Total construction cost ¹	10,335.16	1,449,548.64
Operation and maintenance prior to public notice (net).....	1,643.97	² 47,766.87
Operation and maintenance arrearages being repaid with construction.....		9,746.79
Less:		\$1,411,528.56
Construction revenues.....	² 100.32	5,708.70
To be repaid by water users.....	12,079.45	1,405,819.86
Repayment:		
Water-right contracts (individual).....	² 1,235.00	3,395.00
Contract, Okanogan irrigation district.....	496.00	1,494,445.29
Total.....	² 739.00	1,497,840.29

	Calendar year 1923	To Dec. 31, 1923	Fiscal year 1924	To June 30, 1924
Operation and maintenance cost.....	\$45,558.98	\$387,565.26	\$47,410.98	\$411,863.92
To repay operation and maintenance cost:				
Charges contracted.....	53,551.25	311,892.49	52,884.75	311,225.99
Penalties.....	1,733.52	7,447.37	2,633.50	8,826.10
Discounts (contra).....		359.03		359.03
Miscellaneous revenues.....	888.68	67,553.38	1,006.62	68,079.43
Other credits: Operation and maintenance arrearages being repaid with construction.....		9,746.79		9,746.79
Total.....	56,173.45	396,281.00	56,524.87	397,519.28
Results:				
Excess.....	10,614.47	8,715.74	9,113.89	
Deficit.....				14,344.64

¹ Reconciliation: Net cost to date, twenty-second annual report..... \$1,393,740.41
 Plus:
 Miscellaneous revenues to June 30, 1923..... \$5,809.02
 Operation and maintenance prior to public notice, June 30, 1923 (net).... 49,410.84
 55,219.86

Less: Operation and maintenance arrearages, June 30, 1923..... 1,448,960.27
 9,746.79
 Construction cost to June 30, 1923..... 1,439,213.48
 Actual cost, fiscal year 1924..... 10,335.16
 Construction cost to June 30, 1924..... 1,449,548.64

² Contra.

Status of current accounts receivable as of June 30, 1924

	Due		Collected			Uncollected 1924
	Fiscal year 1924	To June 30, 1924	Cash		Other credits to June 30, 1924	
			Fiscal year 1924	To June 30, 1924		
Construction:						
Water-right charges.....	\$10,849.35	\$67,044.08	\$9,456.77	\$63,738.15		\$3,305.93
Charges paid in advance.....			19.13	137.19		
Operation and maintenance:						
Water-right charges.....						
Project lands (6729 acres).....	62,555.97	283,523.50	49,774.14	264,408.47	2,614.61	16,560.42
Penalties and interest.....			2,633.50	8,247.74	578.36	
Revenues:						
Rentals of irrigating water.....	1,206.37	109,244.48		106,222.69	2,584.19	437.60
Rentals of power and light.....		1,754.71		1,754.71		
Rentals of grazing and farm lands.....	50.00	772.50	50.00	772.50		
Subtotal.....	1,156.37	111,771.69	50.00	168,749.90	2,584.19	437.60
Miscellaneous uncollected.....						1,385.65
Other collections (reclamation fund):						
Construction forfeitures.....			97.50	97.50		
Construction penalties.....			539.06	1,775.14		
Construction refunds.....				75.20		
Operation and maintenance refunds.....				52.50		
Miscellaneous.....			1,620.90	41,011.52		
Grand total collections.....			64,162.74	488,293.31		

1 Contra.

Uncollected construction water rights charges as of June 30, 1924, 4.9 per cent of total accruals.

Uncollected Operation and Maintenance charges as of June 30, 1924 5.8 per cent of total accruals.

YAKIMA PROJECT, WASHINGTON

Appropriations:

Fiscal year 1924—		
Congressional authorizations.....		\$1,312,989.18
Disbursements.....	\$1,061,432.34	1
Liabilities outstanding.....	205,159.94	1,266,592.28
Unencumbered balance, June 30, 1924.....		46,396.90
Fiscal year 1925, amount specified in appropriation act.....		720,000.00

Investment

	Reclamation fund	Judgments Court of claims	Increase of compensation (net)	Total
Disbursements and net transfers.....	\$16,404,580.08	\$71,999.46	\$284,971.60	\$16,761,551.14
Less collections.....	6,674,865.09			6,674,865.09
Net investment June 30, 1924.....	9,729,714.99	71,999.46	284,971.60	10,086,686.05

	Fiscal year 1924	To June 30, 1924
Irrigation works:		
Original construction.....	\$1, 114, 578. 51	\$13, 437, 263. 32
Supplemental construction.....	12, 160. 02	125, 170. 41
Value of works taken over.....		29, 761. 29
Total construction cost.....	¹ 1, 126, 738. 53	\$13, 592, 195. 02
Operation and maintenance prior to public notice (net).....		² 63, 957. 96
Operation and maintenance arrearages being repaid with construction.....	² 45. 02	77, 262. 88
		13, 605, 499. 94
Less:		
Contributed funds.....		63, 736. 50
Construction revenues.....	9, 838. 53	254, 133. 12
		317, 869. 62
To be repaid by water users.....	1, 116, 854. 98	13, 287, 630. 32
Repayment:		
Water-right contracts (individuals).....	242. 89	3, 434, 322. 16
Water-right contracts (Warren Act).....	8, 984. 32	1, 926, 329. 61
Irrigation district contracts.....	9, 889. 00	2, 028, 036. 68
Special contracts.....		2, 279, 600. 00
Total.....	19, 116. 21	9, 668, 288. 45

	Calendar year 1923	To Dec. 31, 1923	Fiscal year 1924	To June 30, 1924
Operation and maintenance cost.....	\$272, 790. 30	\$2, 534, 236. 68	\$283, 537. 84	\$2, 660, 876. 56
To repay operation and maintenance cost:				
Charges contracted.....	264, 914. 02	2, 396, 564. 41	260, 721. 36	2, 465, 487. 24
Penalties.....	6, 762. 09	37, 804. 25	3, 768. 63	38, 461. 57
Discounts (contra).....	2, 771. 53	28, 714. 21	3, 523. 01	31, 548. 29
Miscellaneous revenues.....	6, 833. 84	88, 216. 92	6, 561. 41	92, 583. 91
Other credits: Operation and maintenance arrearages being repaid with construction.....	738. 02	77, 307. 90	² 45. 02	77, 262. 88
Total.....	276, 476. 44	2, 571, 179. 27	267, 483. 37	2, 642, 247. 31
Results:				
Excess.....	3, 686. 14	36, 942. 59		
Deficit.....			16, 054. 47	18, 629. 55

¹ Reconciliation: Net cost to date, twenty-second annual report..... \$12, 239, 239. 57

Plus:

Miscellaneous revenues to June 30, 1923..... \$244, 294. 59

Cost adjustments and undistributed clearing accounts June 30, 1923..... ² 4, 727. 73 239, 566. 86

12, 478, 806. 43

Less:

Operation and maintenance arrearages, June 30, 1923..... 77, 307. 90

Operation and maintenance prior to public notice June 30, 1923..... ² 63, 957. 96 13, 349. 94

Construction cost of June 30, 1923.....

12, 465, 456. 49

Actual cost, fiscal year 1924.....

1, 126, 738. 53

Construction cost to June 30, 1924.....

13, 592, 195. 02

² Contra.

Status of current accounts receivable as of June 30, 1924

	Due		Collected				Uncollected June 30, 1924
	Fiscal year 1924	To June 30, 1924	Cash		Other credits		
			Fiscal year 1924	To June 30, 1924	Fiscal year 1924	To June 30, 1924	
Construction:							
Water-right charges	\$344, 498. 03	\$3, 629, 798. 28	\$357, 247. 36	\$3, 432, 978. 49		\$28, 715. 95	\$168, 103. 84
Contributed funds		63, 736. 50		63, 736. 50			
Total	344, 498. 03	3, 693, 534. 78	357, 247. 36	3, 496, 714. 99		28, 715. 95	168, 103. 84
Charges paid in advance			3, 805. 97	7, 197. 51			
Operation and maintenance:							
Water-right charges, project lands (31,995 acres)	89, 276. 50	744, 021. 68	70, 566. 68	659, 992. 14	\$1, 979. 38	16, 700. 37	67, 329. 17
Warren Act lands (approximately 52,572 acres)	29, 490. 20	175, 022. 92	28, 917. 15	165, 667. 55	8. 11	9. 42	9, 345. 95
Irrigation districts (approximately 67,548 acres)	123, 599. 22	1, 453, 514. 24	119, 729. 26	1, 376, 759. 46	1, 535. 52	15, 883. 84	60, 870. 94
Other lands (approximately 84,611 acres)	18, 355. 44	92, 928. 40	11, 265. 44	85, 838. 40			7, 090. 00
Total	260, 721. 36	2, 465, 487. 24	230, 478. 53	2, 288, 257. 55	3, 523. 01	32, 593. 63	144, 637. 06
Penalties and interest			3, 768. 63	38, 461. 57			
Charges paid in advance			1 46. 04	123. 75			
Revenues:							
Rentals of irrigating water	3, 296. 76	143, 885. 72	2, 771. 31	142, 745. 44			1, 140. 28
Rentals of power and light		3, 635. 33		3, 635. 33			
Rentals of grazing lands	1, 781. 46	23, 061. 50	1, 617. 56	22, 652. 30			409. 20
Subtotal	5, 078. 22	170, 582. 55	4, 388. 87	169, 033. 07			1, 549. 48
Miscellaneous uncollected							1, 043. 11
Other collections (reclamation fund):							
Construction forfeitures			54. 40	1, 057. 62			
Construction penalties			8, 726. 57	60, 993. 37			
Construction refunds				2, 833. 62			
Operation and maintenance refunds				1, 045. 65			
Miscellaneous			47, 879. 57	609, 146. 39			
Grand total collections			656, 303. 86	6, 674, 865. 09			

¹ Contra.

Uncollected construction water right charges as of June 30, 1924, 4.6 per cent of total accruals.
 Uncollected operation and maintenance charges as of June 30, 1924, 5.9 per cent of total accruals.

RIVERTON PROJECT, WYOMING

Appropriations:

Fiscal year 1924—

Congressional authorizations.....	\$679,053.56
Disbursements.....	\$321,353.36
Liabilities outstanding.....	54,944.07

676,297.43

Unencumbered balance June 30, 1924..... 2,756.13

Fiscal year 1925, amount specified in appropriation act..... 650,000.00

Investment

	Reclamation fund	Wind River ceded lands (Indian)	Increase of compensation (net)	Total
Disbursements and net transfers.....	\$1,687,808.78	\$359,176.04	\$44,955.95	\$2,091,940.77
Less collections.....	33,828.47			33,828.47
Net investment June 30, 1924.....	1,653,980.31	359,176.04	44,955.95	2,058,112.30

	Fiscal year 1924	To June 30, 1924
Irrigation works:		
Original construction.....	\$600,061.75	\$1,679,989.87
Operation and maintenance prior to public notice (net).....	2 111.75	2 111.75
Less construction revenues.....	1,895.29	\$1,679,878.12
To be repaid by water users.....	598,054.71	6,599.86
		1,673,278.26

Reconciliation: Net cost to date, twenty-second annual report..... \$1,060,225.09

Plus:

Miscellaneous revenues to June 30, 1923..... \$4,704.57

Cost adjustments and undistributed clearing accounts, June 30, 1923..... 14,995.46

19,700.03

Construction cost to June 30, 1923..... 1,079,928.12

Actual cost, fiscal year 1924..... 600,061.75

Construction cost to June 30, 1924..... 1,679,989.87

2 Contra.

Status of current accounts receivable as of June 30, 1924

	Due		Collected		Uncollected June 30, 1924
	Fiscal year 1924	To June 30, 1924	Cash		
			Fiscal year 1924	To June 30, 1924	
Rentals of irrigating water.....	\$111. 75	\$111. 75	\$111. 75	\$111. 75	
Miscellaneous uncollected.....					\$1,462. 43
Other collections (reclamation fund): Mis- cellaneous.....			6,237. 70	33,716. 72	
Grand total collections.....			6,349. 45	33,828. 47	

SHOSHONE PROJECT, WYOMING

Appropriations:

Fiscal year 1924—

Congressional authorizations		\$896,440.75
Disbursements	\$399,285.77	
Liabilities outstanding	43,328.44	
		447,614.21

Unencumbered balance June 30, 1924		448,826.54
Fiscal year 1925, amount specified in appropriation act		475,000.00

Investment

	Reclamation fund	Judgments Court of Claims	Increase of compensation (net)	Total
Disbursements and net transfers	\$9,477,645.74	\$322,164.67	\$162,839.98	\$9,962,650.39
Less collections	1,327,018.27			1,327,018.27
Net investment June 30, 1924	8,150,627.47	322,164.67	162,839.98	8,635,632.12

	Fiscal year 1924	To June 30, 1924
Irrigation works:		
Original construction	\$136,182.00	\$7,424,013.10
Supplemental construction	474,292.34	1,548,075.26
Total construction cost ¹	610,474.34	8,972,088.36
Operation and maintenance prior to public notice		21,398.67
Operation and maintenance arrearages being repaid with construction		147.75
		\$8,993,634.78
Less:		
Contributed funds		1,000.00
Construction revenues	4,388.07	76,008.49
		77,008.49
To be repaid by water users	606,086.27	\$,916,626.29
Repayment: Water-right contracts (individual)	312,035.73	5,902,575.16
¹ Reconciliation: Net cost to date, twenty-second annual report		\$8,291,013.17
Plus:		
Miscellaneous revenues to June 30, 1923		\$71,620.42
Cost adjustments and undistributed clearing accounts, June 30, 1923		20,526.85
		92,147.27
		\$,383,160.44
Less:		
Operation and maintenance arrearages, June 30, 1923		147.75
Operation and maintenance prior to public notice, June 30, 1923 (net)		21,398.67
		21,546.42
Construction cost to June 30, 1923		\$,361,614.02
Actual cost, fiscal year 1923		610,474.34
Construction cost to June 30, 1924		\$,972,088.36

	Calendar year 1923	To Dec. 31, 1923	Fiscal year 1924	To June 30, 1924
Operation and maintenance cost	\$57,371.90	\$657,668.10	\$54,532.76	\$685,107.26
To repay operation and maintenance cost:				
Charges contracted	61,641.89	671,149.56	62,184.83	670,297.76
Penalties	2,105.16	9,545.72	1,315.77	10,178.31
Discounts (contra)	326.41	10,112.15	478.09	10,343.65
Miscellaneous revenues	871.29	14,662.31	5,955.63	20,182.22
Other credits: Operation and maintenance arrearages being repaid with construction		147.75		147.75
Total	64,291.93	685,393.19	68,978.14	690,462.39
Results: Excess	6,920.03	27,725.09	14,445.38	5,355.13

Status of current accounts receivable as of June 30, 1924

	Due		Collected				Uncollected June 30, 1924
	Fiscal year 1924	To June 30, 1924	Cash		Other credits		
			Fiscal year 1924	To June 30, 1924	Fiscal year 1924	To June 30, 1924	
Construction:							
Water-right charges	\$112, 579. 30	\$913, 782. 66	\$14, 743. 89	\$624, 641. 94	\$1, 317. 18	\$1, 835. 85	\$287, 304. 87
Contributed funds		1, 000. 00		1, 000. 00			
Total	112, 579. 30	914, 782. 66	14, 743. 89	625, 641. 94	1, 317. 18	1, 835. 85	287, 304. 87
Charges paid in advance			416. 27	608. 05			
Operation and maintenance:							
Water-right charges, project lands (64, 457 - 17 acres)	62, 184. 83	670, 297. 76	16, 330. 66	421, 391. 31	3, 948. 26	18, 597. 12	230, 309. 33
Penalties and interest			777. 08	7, 822. 62	538. 69	2, 355. 69	
Charges paid in advance			69. 93	338. 50	97. 17	101. 00	
Revenues:							
Rentals of irrigating water	5, 282. 47	17, 648. 52	5, 394. 57	17, 508. 47			140. 05
Rentals of power and light	8, 114. 63	14, 637. 34	7, 944. 24	13, 969. 44			667. 90
Rentals of grazing and farming lands	1, 121. 27	9, 589. 61	1, 272. 27	9, 379. 61			210. 00
Subtotal	14, 518. 37	41, 875. 47	14, 611. 08	40, 857. 52			1, 017. 95
Miscellaneous uncollected							39, 192. 94
Other collections (reclamation fund):							
Construction forfeitures			1, 844. 10	6, 760. 30			
Construction penalties			1, 020. 20	9, 231. 43			
Construction refunds			282. 75	2, 583. 34			
Operation and maintenance refunds				409. 45			
Miscellaneous			5, 157. 39	211, 373. 81			
Grand total collections			55, 253. 35	1,327,018.27			

Uncollected construction water-right charges as of June 30, 1924, 31.4 per cent of total accruals.

Uncollected operation and maintenance charges as of June 30, 1924, 34.4 per cent of total accruals.

SECONDARY PROJECT INVESTIGATIONS

BAKER

Appropriations:		
Fiscal year 1924—		
Congressional authorizations		\$500, 394. 32
Disbursements		4, 459. 28
Unencumbered balance June 30, 1924		495, 935. 04
Fiscal year 1925, amount specified in appropriation act		1 495, 935. 04

OTHERS

Appropriations:		
Fiscal year 1924—		
Congressional authorizations ²		* \$292, 473. 22
Disbursements ³	\$128, 628. 57	
Liabilities outstanding	4, 943. 82	
		133, 572. 39
Unencumbered balance June 30, 1924		158, 900. 83
Fiscal year 1925, amount specified in appropriation act		75, 000. 00

¹ The appropriation act authorizes the expenditure by Baker in fiscal year 1925 of the unexpended balance of the appropriation for the fiscal year 1924.² \$25,869.22 of this amount also included in statement of appropriation for general investigations, Reclamation Service, 1923-Dec. 31, 1924. (\$25,500, funds advanced deposited to credit of reclamation fund, and \$369.22 increase of compensation appropriation.)³ \$5,120.16 of this amount also included in statement of expenditures in connection with appropriation general investigations, Reclamation Service, 1923-Dec. 31, 1924. (\$4,750.94, reclamation fund, and \$369.22 increase of compensation.)

	Baker		Deschutes to June 30, 1924	Other investigations		Total	
	Fiscal year 1924	To June 30, 1924		Fiscal year 1924	To June 30, 1924	Fiscal year 1924	To June 30, 1924
Cost of investigations...	\$4,506.27	\$57,945.36	\$8,360.96	\$129,485.39	\$2,069,642.17	\$133,991.66	\$2,135,948.49
Less contributed funds		5,000.00		12,291.47	470,783.46	12,291.47	475,783.46
Cost to United States	4,506.27	52,945.36	8,360.96	117,193.92	1,598,858.71	121,700.19	1,660,165.03
Investment:							
Reclamation fund,							
disbursements and							
net transfers	3,643.66	52,686.68	894.85	128,551.90	2,038,929.65	132,195.56	2,092,511.18
Increase of compensa-	85.05	1,442.00	43.01	5,852.76	39,779.56	5,937.81	41,264.57
tion (net)							
Less collections	3,728.71	54,128.68	937.86	134,404.66	2,078,709.21	138,133.37	2,133,775.75
	203.55	879.29	.15	38,275.87	612,628.62	38,479.42	613,508.06
Net investment June 30, 1924	3,525.16	53,249.39	937.71	96,128.79	1,466,080.59	99,653.95	1,520,267.69

Status of current accounts receivable as of June 30, 1924

	Due		Collected			Uncol- lected June 30, 1924
	Fiscal year 1924	To June 30, 1924	Cash		Other credits to June 30, 1924	
			Fiscal year 1924	To June 30, 1924		
Contributed funds:						
Baker.....		\$5,000.00		\$5,000.00		
Other secondary investi- gations.....	\$12,291.47	470,783.46	\$13,042.42	438,190.12		\$32,593.34
Revenues from rentals of graz- ing and farming lands:						
Deschutes.....		7,407.29			\$7,407.29	
Other secondary investi- gations.....	9,004.82	155,619.70	9,472.58	119,538.35	35,090.38	990.97
Miscellaneous uncollected						458.17
Miscellaneous:						
Baker.....			203.55	879.29		
Other secondary investi- gations.....			15,760.87	49,900.15		
Deschutes.....				.15		
Grand total collections.....			38,479.42	613,508.06		

Costs of secondary project investigations and funds contributed for these investi-
gations

Features	Cost, fiscal year 1924	Total to June 30, 1924	Contributed funds
Arizona:			
Arizona well drilling		\$3,069.63	\$1,446.01
Arizona cooperative		20,295.17	13,714.42
Parker		517.91	
San Carlos distribution		8,638.54	8,638.54
Little Colorado		9,554.33	
San Carlos		24,829.51	
San Pedro		2,427.34	
Paradise-Verde		929.14	929.14
Colorado River diversions	\$233.80	1,957.23	
Total Arizona	233.80	72,218.80	24,728.11
Arizona-California:			
Boulder Canyon Reservoir	43,193.36	325,354.81	141,000.00
Colorado River Basin	7.45	166,153.79	
Colorado River (prior to July 1, 1914)		43,710.00	
Total Arizona-California	43,200.81	535,218.60	141,000.00

Costs of secondary project investigations and funds contributed for these investigations—Continued

Features	Cost, fiscal year 1924	Total to June 30, 1924	Contributed funds
California:			
Owens Valley.....		\$18,232.01	\$18,232.01
Imperial Laguna.....		1,543.81	1,543.81
Iron Canyon.....		36,806.00	18,550.73
Imperial Valley.....		2,794.04	
Jess Valley.....		3,805.74	1,901.01
Kings River storage.....		1,157.70	
Lassen County.....		2,445.60	1,222.80
Turlock-Modesto.....		278.97	
Oakdale-So. San Joaquin.....		1,079.16	
Putah Creek.....		211.32	
Pitt River cooperative.....		2,499.18	
Sacramento Valley.....		13,620.72	
San Joaquin.....		3,531.20	
San Luis Rey.....		698.53	
San Ysidro.....		7.50	
Shasta County cooperative.....		5,645.75	2,297.38
Warners Ranch Reservoir.....		5,378.35	5,378.35
Woodbridge.....		180.47	
Owens Valley cooperative.....		12,061.92	
California power investigations.....	\$3,429.50	3,429.50	320.78
Imperial Valley cooperative.....	4.16	39,018.65	26,009.66
Stoney Gorge Reservoir.....	¹ 7,823.00	7,823.00	
Total California.....		11,256.66	192,249.12
			75,456.53
California-Oregon: Shasta Valley.....			
		36,649.14	31,649.14
Colorado:			
Dolores.....		4,256.27	
White River.....		4,357.00	
Little Snake River.....		951.43	
Montezuma.....		4,918.10	
San Luis Valley.....		4,318.01	
Upper White River.....	6,282.27	6,282.27	
San Juan Basin.....	267.48	267.48	
Total Colorado.....		6,549.75	25,350.56
Colorado-Utah: Lower White River.....			
	2,134.25	13,475.08	7,000.00
Idaho:			
Idaho investigations.....		1,327.25	
Island Park.....		4,774.53	
Mountain Home.....		5,978.57	
Mountain Home cooperative.....	213.45	15,547.70	7,773.85
Swan Valley.....		544.88	
Dubois.....		17,252.06	
Dubois cooperative.....	9,425.81	17,260.68	4,055.53
Port Neuf.....		2,168.01	
General investigations.....		1,191.78	
Weiser River storage.....		918.96	
Wood River.....		168.95	
Succor Creek.....		2,392.67	
Total Idaho.....		9,639.26	69,526.04
			11,829.38
Montana:			
Clarks Fork (old ledger).....		5,581.23	
Crow Reservation.....		18,911.96	
Judith Basin.....		2,891.42	2,891.42
Lake Basin.....		7,103.26	
Bitter Root.....		2,719.64	
Madison River.....		10,729.09	
Marias.....		13,546.39	
Missoula-Huson.....		3,086.33	
Toston, vicinity of.....		544.58	
Kalispell.....		73.29	73.29
Clarks Fork.....		3,666.95	
Tally Lake.....		2,544.21	2,544.21
Cut Bank.....		1,863.01	1,863.01
Camas.....	² 65	100.00	100.00
Blackfeet water supply.....	986.75	986.75	2,500.00
Total Montana.....		986.10	74,348.11
			9,971.93
Montana-North Dakota: Surveys.....			
		9,296.90	

¹ Transferred from Orland project.² Credit.

Costs of secondary project investigations and funds contributed for these investigations—Continued

Features	Cost, fiscal year 1924	Total to June 30, 1924	Contributed funds
Nebraska:			
Tri-County		\$8,381.70	\$5,000.00
South Platte		2,877.01	
Lower Platte		23,844.61	15,400.00
Total Nebraska		35,103.32	20,400.00
Nevada:			
Humboldt River		722.55	
Walker River		13,695.37	
Upper Owyhee		292.08	292.08
Total Nevada		14,711.00	292.08
New Mexico:			
Middle Rio Grande		4,130.07	
La Plata		28,064.33	
Las Vegas		5,014.09	
Upton Lake		17,464.70	
Pecos Valley	\$1,088.42	12,706.24	5,700.00
Penasco	3,136.57	5,798.12	
Middle Rio Grande cooperative		5,766.45	5,766.45
Total New Mexico	4,224.99	78,944.00	11,466.45
North Dakota:			
Bismark		13,621.69	
Bowman		4,025.03	
Little Missouri		11,933.52	
Washburn		10,532.73	
Nesson		17,471.83	
Total North Dakota		57,584.80	
Oklahoma:			
Lawton		13,774.82	
Turkey Creek		137.30	
Cimarron		8,891.17	
Oklahoma reconnaissance		400.00	
Red River		60,209.27	
Total Oklahoma		83,412.56	
Oregon:			
Central Oregon		39,128.82	
Columbia River cooperative		17,008.51	
John Day		16,009.57	
Deschutes		22,893.15	17,896.88
Harney		1,046.62	
Klamath River investigations		347.39	
Malheur		88,472.72	14,724.61
Ochoco-Crooked River		3,570.30	1,307.09
Malheur (cooperative)	2,889.11	7,110.89	5,000.00
Owyhee (Oregon cooperative)		1,615.74	
Owyhee (Oregon secondary)		1,267.29	
Owyhee (cooperative)		8,709.22	4,354.61
Rogue River		1,426.96	942.07
Silver Creek		334.23	
Silver Lake		3,407.03	775.91
Warner Valley		1,181.85	
White River		97.03	
Willamette Valley		378.20	
Teel District		456.35	
General investigations		226.43	
Baker	4,506.27	57,945.36	5,000.00
Deschutes		8,360.96	
Total Oregon	7,395.38	280,994.62	53,001.17
South Dakota: Angostura		6,874.31	3,542.61
Texas:			
Cotulla		110.00	
Lower Rio Grande (irrigation)		32,598.81	15,394.44
Lower Rio Grande (flood control)		12,543.12	12,543.12
Pecos River Survey		7,120.71	
Lower Rio Grande (irrigation districts)		558.49	558.49
Red Bluff Reservoir	74.32	5,500.00	5,500.00
Lower Rio Grande associated improvement districts		5,506.79	5,506.79
Total Texas	74.32	63,937.92	39,502.84

Costs of secondary project investigations and funds contributed for these investigations—Continued

Features	Cost, fiscal year 1924	Total to June 30, 1924	Contributed funds
Utah:			
Castle Peak	\$57. 00	\$24, 851. 13	\$999. 45
Dixie Reservoir		863. 52	
Utah reconnaissance		632. 59	
Mammoth Reservoir		404. 27	
Price River		17. 73	
Price River (1923-24)		127. 67	
Green River water-right investigations		252. 74	
Bear Lake		18, 827. 72	
Provo-Weber		141. 35	
Utah Lake		34, 049. 30	
Juab investigations		4, 196. 68	4, 196. 68
Green River (cooperative)		10, 494. 18	5, 247. 09
Salt Lake Basin	32, 383. 94	63, 436. 96	30, 500. 00
Cashe Valley	6, 912. 00	7, 246. 26	5, 000. 00
Transmountain diversions	1, 983. 67	3, 555. 02	
Spanish Fork-Lehi drainage	400. 00	500. 91	
Total Utah	41, 736. 61	169, 598. 03	45, 943. 22
Washington:			
Benton		11, 167. 45	
Columbia River Basin		5, 687. 02	
Kittitas		19, 366. 90	
Lower Snake River—Pasco		2, 099. 49	
Methow-Okanogan		192. 14	
Palouse		76, 409. 01	
Palouse cooperative		10, 201. 92	
Wapato		36, 465. 77	
Priest Rapids		6, 216. 01	
Columbia River power investigations		4, 042. 95	
Snahe and Columbia River		82. 81	
Total Washington		171, 931. 47	
Wyoming:			
Pathfinder pumping		1, 568. 96	
Church Butte		1, 442. 28	
DeSmet		8, 917. 38	
Fifteen-Mile		125. 06	
Green River		320. 15	
Lyman		2, 477. 77	
North Platte cooperative		5, 868. 66	
Wyoming cooperative		3, 681. 76	
Saratoga-Encampment		4, 883. 61	
General investigations		2, 073. 34	
Alcova-Casper		4, 809. 77	
Total Wyoming		36, 168. 74	
Miscellaneous:			
General reconnaissance		6, 182. 31	
Miscellaneous investigations	255. 76	9, 179. 95	
Preliminary investigations		80, 488. 73	
Experimental investigations	14, 224. 95	20, 425. 36	
Total miscellaneous	14, 480. 71	116, 276. 35	
Unadjusted clearing		17, 920. 98	
Grand total secondary projects	141, 912. 64	2, 143, 869. 47	475, 783. 46

¹ Contra.**"GENERAL INVESTIGATIONS RECLAMATION SERVICE 1923, DECEMBER 31, 1924"**

NOTE.—Financial data for this work are not included in the consolidated statements for reclamation fund projects, except that the consolidated statement of investment includes certain expenditures and collections which were in connection with the "General Investigations" work. The items which are included in both statements are as follows:

Reclamation fund disbursements	\$4, 750. 94
Increase of compensation disbursements	369. 22

Reclamation fund collections	5, 120. 16
	25, 500. 00

The collections represent "funds advanced" for investigations which are deposited to the credit of the reclamation fund and expended therefrom.

Appropriations:	
Congressional authorizations	\$326, 368. 52
Disbursements	\$213, 632. 29
Liabilities outstanding	8, 331. 37
	221, 963. 66

Unencumbered balance June 30, 1924	104, 404. 86
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Costs of secondary project investigations and funds contributed for these investigations—Continued

	Fiscal year 1924	To June 30, 1924
Cost of investigations.....	¹ \$187,247.36	\$187,247.36
Less contributed funds.....	25,500.00	25,500.00
Cost to United States.....	161,747.36	161,747.36
Investment:		
Disbursements—		
General investigations appropriation.....	185,782.14	202,190.38
Reclamation fund ²	4,750.94	4,750.94
Increase of compensation (net)—		
In connection with general investigations fund.....	4,284.29	4,589.10
In connection with reclamations fund ²	369.22	369.22
Total.....	195,186.59	211,899.64
Less collections—		
General investigations fund.....	19,177.55	19,177.55
Reclamation fund ²	25,500.00	25,500.00
Total.....	44,677.55	44,677.55
Net investment June 30, 1924 (all funds).....	150,509.04	167,222.09

¹ Includes \$13,471.65 cost prior years.

² These figures also included in consolidated statement of investment for reclamation fund projects.

Status of current accounts receivable as of June 30, 1924

	Due		Collected cash	
	Fiscal year 1924	To June 30, 1924	Fiscal year 1924	To June 30, 1924
Contributed funds.....	\$25,500.00	\$25,500.00	\$25,500.00	\$25,500.00
Other collections.....			19,177.55	19,177.55
Grand total collections.....			44,677.55	44,677.55

Cost of investigations and funds contributed for these investigations

Features	Cost fiscal year 1924	Total to June 30, 1924	Contributed funds
Arizona-Nevada-Utah: Colorado River tributaries.....	\$5,092.26	\$5,092.26	
California:			
Sacramento Valley, salt water control.....	2,151.06	2,151.06	\$7,500.00
Sacramento Valley, Iron Canyon investigations.....	452.40	452.40	2,500.00
Total California.....	2,603.46	2,603.46	10,000.00
Colorado:			
Badito.....	606.37	606.37	
San Luis Valley.....	1,725.60	1,725.60	
Total Colorado.....	2,331.97	2,331.97	
Colorado-New Mexico: San Juan Basin.....	9,296.10	9,296.10	
Idaho: Black Canyon.....	9,928.30	9,928.30	
Nebraska: Tri-county.....	10,780.34	10,780.34	5,500.00
New Mexico: Estancia Valley.....	181.15	181.15	
New Mexico-Texas: Pecos Valley compact.....	3,048.67	3,048.67	
Oregon:			
Malheur.....	4,965.66	4,965.66	
Owyhee.....	9,133.05	9,133.05	
Total Oregon.....	14,098.71	14,098.71	
Oregon-Washington: Umatilla Rapids.....	52,668.63	52,668.63	10,000.00
Texas: Red Bluff Reservoir.....	6,670.44	6,670.44	
Washington:			
Columbia Basin.....	67,649.09	67,649.09	
Yakima extensions.....	2,898.24	2,898.24	
Total Washington.....	70,547.33	70,547.33	
Grand total.....	¹ 187,247.36	187,247.36	25,500.00

¹ Includes \$13,471.65 cost prior years.

ENGINEERING DATA FOR PROJECTS ON COMPLETION

[The following tables of data for projects on completion, covering reservoirs, storage dams, diversion dams and irrigable area, are necessarily subject to some revision as the projects develop and more detailed plans are prepared. In so far as they refer to works yet to be built or areas not yet covered by canal, they are not to be taken as guaranteeing that such work will ever be done. All future work depends on appropriations therefor by Congress]

Engineering data for projects when completed

RESERVOIRS

Projects	Name	Area	Capacity	Spillways			
				Length	Elevation above stream bed	Capacity	
		<i>Acres</i>	<i>Acres-feet</i>	<i>Feet</i>	<i>Feet</i>	<i>Sec.-ft.</i>	<i>Sec.-ft.</i>
Arizona: Salt River	Roosevelt	18,100	1,635,000	420	240	113,000	150,000
California: Orland	East Park	1,850	51,000	415	88	8,000	12,000
Colorado: Uncompahgre	Taylor Park	2,260	106,000	(1)	(1)	(1)	(1)
Idaho:							
Boise	Deer Flat	9,835	177,000	None.			
Do.	Arrowrock	2,860	280,000	402	247	15,000	40,000
Minidoka	Lake Walcott	11,850	2 150,000	2,385	42	40,000	60,000
Do.	Jackson Lake	25,540	847,000	160	41	7,500	13,000
Do.	American Falls	56,500	3 1,700,000	648	75	60,000	115,000
Montana:							
Milk River	Sherburne Lakes	2,000	78,000	160	68	4 200	8,000
Do.	St. Mary Lakes	6,910	124,000	500		20,500	20,000
Do.	Nelson Reservoir	4,560	68,500	(5)	23		
Do.	Point of Rocks	180	830	740	8	10	700
Do.	Chain Lakes	9,400	241,000	300	58	4 300	10,000
Sun River	Willow Creek 7	2,696	86,000	200	100	725	(1)
Do.	Beaver Creek 8	1,360	105,000	275	190		42,500
Do.	Pishkun Reservoir 9	1,542	45,700	Under control.			
Do.	Muddy Creek	1,828	33,000		80	284	(1)
Do.	Benton Lake	9,300	144,000	Under control.			
Nebraska-Wyoming:							
North Platte	Pathfinder	22,700	1,070,000	605	184	40,000	
Do.	Lake Alice	900	11,400	100	18	2,500	
Do.	Lake Minatare	2,240	60,760	100	55	2,000	
Do.	Winters Creek Lake	360	3,000	None.			
Do.	Guernsey	2,336	72,700	300	80	27,500	50,000
Nevada: Newlands	Lake Tahoe	120,000	120,000	85	6	2,500	
Do.	Lahontan	10,000	290,000	500	112	18,800	30,000
Do.	Spanish Springs	9,400	300,000	60	96	1,600	1,600
New Mexico: Carlsbad	Avalon	970	7,000	1,026	21	86,000	120,000
Do.	McMillan	6,600	45,000	1,750	26.1-24.9	34,500	60,000
New Mexico-Texas: Rio Grande	Elephant Butte	40,080	2,638,000	275	193	8,000	16,000
Oregon: Umatilla	Cold Springs	1,500	50,000	330	90	6,000	6,000
Do.	McKay	1,600	75,000	120	140	10,000	10,000
Oregon-California: Klamath	Upper Klamath Lake	60,000	400,000	None.			
Do.	Clear Lake	25,000	462,000	357	24	10,000	30,000
Do.	Gerber	3,790	90,000	150	63		10,000
South Dakota: Belle Fourche	Belle Fourche	8,010	203,000	314	100	2,000	2,000
Utah: Strawberry Valley	Strawberry Valley	8,370	255,000	58	61	500	2,000
Washington:							
Okanogan	Salmon Lake	240	10,500	Siphon.	48		400
Do.	Conconully	460	14,400	180	58	4,500	16,000
Yakima	Bumping Lake	1,300	34,000	235	36		6,000
Do.	Lake Clealum	4,680	501,000	420	112		18,000
Do.	Lake Kachess	4,540	210,000	250	53		7,200
Do.	Tiefon	2,500	202,500	390	206		50,000
Do.	Lake Keechelus	2,550	152,000	300	60		10,000
Do.	Clear Creek	270	5,830	261	58		
Wyoming: Riverton	Pilot Butte	882	30,000	100			500
Do.	Bull Lake	3,100	145,000	170	67	4,000	8,000
Shoshone	Shoshone	6,600	456,600	300	233	11,000	30,000
Do.	Ralston	200	2,100				
Do.	Deaver	80	680	None.			
Total		519,739	13,792,500				

¹ Undetermined.

² 95,180 acre-feet only available; above fixed crest of spillway.

³ First construction may be for less capacity with provision for ultimate increase to amount stated.

⁴ Average flow of stream on which reservoir is located.

⁵ No spillways; drainage limited elevation is that of water surface.

⁶ Consists of 8 siphons each 5 feet high and 10 feet wide at throat.

⁷ Present capacity 16,700 acre-feet.

⁸ Tentative.

⁹ Present capacity 3,523 acre-feet.

Engineering data for projects when completed—Continued

STORAGE DAMS

Projects	Name	Type	Maximum height	Crest length	Volume
Arizona: Salt River	Roosevelt ¹⁰	Rubble masonry arch, gravity.	Feet 280	Feet 1, 125	Cubic yds. 342, 325
California: Orland	East Park ¹⁰	Concrete arch, gravity	139	250	12, 200
Colorado: Uncompahgre.	Taylor Park	Undetermined	(¹¹)	(¹¹)	(¹¹)
Idaho:					
Boise	Upper Deer Flat ¹⁰	Earth fill	70	4, 000	1, 190, 275
Do	Lower Deer Flat ¹⁰	do	40	7, 200	1, 207, 606
Do	Deer Flat Forest ¹⁰	do	16	950	22, 500
Do	Arrowrock ¹⁰	Rubble concrete arch, gravity.	349	1, 100	585, 130
Minidoka	Minidoka ¹⁰	Rock fill, concrete core	86	937	242, 500
Do	Jackson Lake ¹⁰	Massive concrete gate section and earth fill.	67	4, 450	315, 400
Do	American Falls	Concrete gravity	¹² 87	3, 100	170, 000
Montana:		Earth fill	75	1, 900	150, 000
Milk River	Sherburne Lakes ¹³	Earth embankment	83	1, 133	201, 500
Do	St. Mary Lakes	do	30	2, 000	135, 000
Do	Nelson ¹⁰	do	28	9, 900	175, 000
Do	Point of Rocks ¹⁰	do	12.5	2, 680	31, 000
Do	Connolly	do	68	3, 125	2, 019, 000
Sun River	Willow Creek ¹⁴	Earth fill	110	1, 045	452, 000
Do	Beaver Creek ⁸	Masonry	205	820	195, 000
Do	Pishkun ¹⁵	Earth fill	48	8, 600	444, 000
Do	Muddy Creek	do	90	800	440, 000
Do	Benton Lake	do	40	240	12, 000
Nebraska-Wyoming:	Pathfinder ¹⁰	Broken range masonry arch	218	432	60, 210
North Platte.					
Do	Pathfinder Dike ¹⁰	Earth fill	40	1, 650	152, 000
Do	Upper Lake Alice ¹⁰	do	30	3, 100	240, 000
Do	Lower Lake Alice ¹⁰	do	23	2, 550	119, 000
Do	Minatere ¹⁰	do	65	3, 700	570, 000
Do	Guernsey	Earth and rock fill.	97	575	332, 000
Nevada: Newlands.	Lake Tahoe ¹⁰	Concrete sluiceway regulator	14	109	425
Do	Lahontan ¹⁰	Earth and gravel fill with concrete spillways.	124	1, 400	770, 000
Do	Spanish Springs	do	112	2, 815	1, 700, 000
New Mexico:					
Carlsbad	Avalon ¹⁰	Earth and rockfill, concrete core.	50	1, 380	168, 773
Do	McMillan ¹⁰	Earth and rock fill	55	2, 070	150, 744
New Mexico-Texas:	Elephant Butte ¹⁰	Rubble concrete, gravity	306	¹⁰ 1, 155	¹⁷ 605, 200
Rio Grande.					
Do	Elephant Butte Dike ¹⁰	Earth and rock fill	42	2, 000	179, 000
Oregon: Umatilla.	Cold Springs ¹⁰	do	98	3, 800	789, 500
Do	McKay	Earth and gravel fill	160	2, 600	2, 300, 000
Oregon-California:	Clear Lake ¹⁰	Rock fill	33	790	56, 600
Klamath.					
Do	Link River ¹⁰	Concrete	22	435	2, 200
Do	Gerber	Concrete arch	85	470	9, 500
South Dakota: Belle Fourche.	Belle Fourche ¹⁰	Earth fill	122	6, 200	1, 600, 000
Utah: Strawberry Valley.	Indian Creek Dike ¹⁰	Earth fill, reinforced concrete	37	1, 311	101, 107
Do	Strawberry Dam ¹⁰	Earth fill, reinforced concrete core wall.	72	488	108, 415
Washington:					
Okanogan	Salmon Lake ¹⁰	Earth embankment	40	1, 260	194, 288
Do	Conconully ¹⁰	Hydraulic earth fill	67	1, 000	354, 242
Yakima	Bumping Lake ¹⁰	Earth fill	45	3, 425	247, 700
Do	Lake Cle Elum ¹⁸	Earth and gravel fill	125	700	462, 000
Do	Lake Kachess ¹⁰	do	63	1, 400	193, 300
Do	Tieton	Earth and rock fill, concrete-core wall.	244	905	1, 850, 000
Do	Lake Keechelus ¹⁰	Earth and gravel fill	70	6, 500	639, 000
Do	Clear Creek ¹⁰	Single concrete arch	84	404	4, 100
Wyoming: Riverton.	Pilot Butte	Earth embankment	40	2, 400	130, 000
Do	Bull Lake	do	75	3, 300	600, 000
Shoshone.	Shoshone ¹⁰	Rubble concrete arch	328	200	78, 576
Do	Ralston ¹⁰	Earth fill	50	2, 200	24, 740
Do	Deaver	do	14	1, 300	30, 300
Total					23, 195, 356

⁸ Tentative.¹⁰ Completed.¹¹ Not designed.¹² First construction may be for a dam of less height with provision for raising to height stated.¹³ Completed except permanent spillway.¹⁴ Completed to height of 72.5 feet; crest length, 525 feet; volume, 196,400 cubic yards.¹⁵ Completed to height of 19 feet.¹⁶ Including spillway and approaches, 1,675 feet.¹⁷ Including spillway, 619,000 cubic yards.¹⁸ Present development, rock-fill timber crib; height, 11 ft.; volume, 1,500 cubic yards.

Engineering data for projects when completed—Continued

DIVERSION DAMS

Projects	Name	Type	Maximum height	Crest length	Volume
			<i>Feet</i>	<i>Feet</i>	<i>Cubic yds.</i>
Arizona: Salt River	Granite Reef ¹⁰	Rubble concrete weir	38	1,000	40,000
Do	Power Canal ¹⁰	do	12¾	400	4,800
Do	Joint Head ¹⁰	Concrete weir	10	600	1,740
Arizona - California: Yuma	Laguna ¹⁰	Indian weir, concrete and rock fill. ¹⁰	10	4,780	441,732
California: Orland	South Canal ¹⁰	Concrete on piling, with rock fill.	20	900	2,886
Do	North side ¹⁰	Concrete weir, with removable timber crest.	8	360	270
Do	East Park Feed Canal. ¹⁰	Concrete arch	44	154	1,777
Colorado: Grand Valley	Colorado River Diversion. ¹⁰	Masonry ogee weir with roller crest 10 to 15 feet high.	24	546	25,682
Uncompahgre	Gunnison ¹⁰	Crib with rock fill and movable flashboards.	15¾	237	3,200
Do	Montrose and Delta ¹⁰	Timber weir with concrete apron sluiceway and cut-off wall.	6.8	68½	172
Do	Loutsenhizer ¹⁰	Pile and timber weir	8	100	
Do	Selig ¹⁰	Pile and timber weir with concrete sump.	6	95½	205
Do	Ironstone ¹⁰	Pile foundation with timber deck and needle flashboards.	8½	58½	
Do	East ¹⁰	Pile and timber weirs, movable flashboards.	(²⁰)	144	
Do	Garnet ¹⁰	Rock baskets, faced and surfaced with concrete.	6½	75	500
Idaho: Boise	Boise River ¹⁰	Rubble concrete weir	45	²¹ 246	21,750
Do	Black Canyon ¹⁰	Concrete masonry	183	1,040	79,844
Minidoka	Minidoka ¹⁰	Combined diversion and storage dam. (See Storage.)			
Montana: Milk River	Swift Current ¹⁰	Earth and timber crib	13	2,800	86,700
Do	St. Mary ¹⁰	Concrete	6.5	198	480
Do	Chinook ²²	Timber crib rock filled, concrete abutments, movable crest.	25	319	12,000
Do	Dodson ¹⁰	Reinforced concrete, automatic movable crest.	34	1,500	11,000
Do	Vandalia ¹⁰	Concrete masonry	132	212	6,200
Sun River	Sun River ¹⁰	Rock-filled, timber weir	12	700	14,500
Montana-North Dakota: Lower Yellowstone	Lower Yellowstone ¹⁰				
Nebraska-Wyoming: North Platte	Whalen ¹⁰	Concrete weir	29	300	80,740
Do	Horse Creek ¹⁰	do	12	100	220
Nevada: Newlands	Truckee River ¹⁰	16 concrete sluiceways	22	171	3,322
Do	Carson River ¹⁰	23 concrete sluiceways	20	240	2,707
New Mexico: Carlsbad	Avalon ¹⁰	Combined storage and diversion. (See Storage.)			
New Mexico-Texas: Rio Grande	Leasburg ¹⁰	Rubble concrete weir	10.8	600	2,413
Do	Mesilla ¹⁰	do	16.7	303	2,876
Do	Mexican ²³	Rubble masonry	4.7	320	1,200
Do	Percha ¹⁰	Rubble concrete	17	350	4,346
Oregon: Umatilla	Feed Canal (Echo) ¹⁰	Concrete weir on timber crib	23½	400	296
Do	Maxwell Canal ¹⁰	do	2.3	175	43
Do	Three-Mile Falls ¹⁰	Concrete multiple arch	24	800	4,160
Oregon - California: Klamath	Lost River ¹⁰	Hollow reinforced concrete	40	290	5,550
Do	Lower Lost River ²⁴	Reinforced concrete	15	204	625
Do	Malone ¹⁰	Earth, with concrete spillway.	30	515	18,500
Do	Miller	do	12	290	1,000

¹⁰ Completed.¹⁹ Maximum height 40 feet from bottom of sheet piling to top of dam; water raised 10 feet.²⁰ Two weirs, one 6 feet by 72 feet, the other 6 feet 10 inches by 72 feet.²¹ Length, including logway.²² Will be constructed by irrigation districts. No data available as to type and dimensions.²³ Constructed by Mexican authorities and used jointly.²⁴ Under construction.²⁵ Includes 320 acres of vested rights and 171 acres of town and school sites.

Engineering data for projects when completed—Continued

DIVERSION DAMS—Continued

Projects	Name	Type	Maximum height	Crest length	Volume
South Dakota: Belle Fourche.	Diversion ¹⁰	Concrete weir	<i>Fect</i> 23	<i>Fect</i> 400	<i>Cubic yds.</i> 12, 149
Utah: Strawberry Valley.	Spanish Fork ¹⁰	do	16	70	1, 262
Do	Indian Creek Crossing. ¹⁰	Earth	17	1, 300	15, 183
Washington: Okanogan.	Salmon Creek ¹⁰	Concrete weir	4½	50	132
Yakima.	Sunnyside ¹⁰	Concrete ogee weir	8½	500	2, 291
Do	Tieton Diversion ¹⁰	Concrete and rock-filled crib.	3	110	334
Wyoming: Riverton.	Wind River ¹⁰	Concrete weir with earth embankment.	37	2, 285	123, 850
Shoshone.	Corbett ¹⁰	Reinforced concrete weir	18	400	4, 951
Do	Willwood ¹⁰	Concrete gravity, with ogee weir section.	69. 5	320	22, 119
Total					1, 065, 707

¹⁰ Completed.

IRRIGABLE AREA, PRESENT STATUS

State, project, and division	Public land			State land unsold	Indian land	Private land		Total
	Entered	Open	Withdrawn			Railroad, unsold	Other	
Arizona:	<i>Acres</i>	<i>Acres</i>	<i>Acres</i>	<i>Acres</i>	<i>Acres</i>	<i>Acres</i>	<i>Acres</i>	<i>Acres</i>
Salt River	16, 170						197, 000	213, 170
Gravity system							183, 247	183, 247
Pumping system	16, 170						13, 753	29, 923
Arizona-California: Yuma.	16, 714	1, 632	33, 284		8, 200		50, 170	110, 000
Arizona—								
Valley	6, 070		1, 000				42, 930	50, 000
Mesa	4, 444	1, 632	31, 884				7, 040	45, 000
California—Reservation.	6, 200		400		8, 200		200	15, 000
California:								
Orland—Main							²⁵ 20, 665	²⁵ 20, 665
Colorado:								
Grand Valley	13, 442	403	12, 310				28, 845	55, 000
Garfield gravity	10, 912	403	8, 280				15, 405	35, 000
Garfield pumping	2, 530		4, 030				3, 440	10, 000
Orchard Mesa pumping							10, 000	10, 000
Uncompahgre	19, 258	1, 309	674				75, 823	97, 064
South	2, 352	251	37				6, 339	8, 979
West	2, 245	10	12				4, 033	6, 300
Montrose and Delta.	5, 280	70	31				23, 257	28, 638
Loutsenhizer	226						6, 463	6, 689
Selig	4, 154	511	480				7, 433	12, 578
Ironstone	1, 181	65	20				16, 752	18, 018
East	3, 812	402	94				8, 870	13, 178
Garnet	8						2, 676	2, 684
Idaho:								
Boise	67, 874		5, 560	5, 980			274, 987	354, 401
Arrowrock (Idaho)	66, 635			60			203, 796	270, 491
Arrowrock (Oregon)	1, 239						5, 697	6, 936
Notus							6, 874	6, 874
Hillcrest			2, 230				11, 870	14, 100
Black canyon			3, 330	5, 920			46, 750	56, 000
King Hill		8		426			16, 454	16, 888
Minidoka	96, 149	570	106, 840	8, 999			24, 016	236, 574
Pumping	30, 258			788			17, 914	48, 960
Gravity	65, 891	570		371			5, 782	72, 614
North side pumping extension			106, 840	7, 840			320	115, 000

²⁵ Includes 320 acres of vested rights and 171 acres of town and school sites.

Engineering data for projects when completed—Continued

IRRIGABLE AREA, PRESENT STATUS—Continued

State, project, and division	Public land			State land unsold	Indian land	Private land		Total
	Entered	Open	Withdrawn			Railroad, unsold	Other	
	<i>Acres</i>	<i>Acres</i>	<i>Acres</i>	<i>Acres</i>	<i>Acres</i>	<i>Acres</i>	<i>Acres</i>	<i>Acres</i>
Montana:								
Huntley	26,053	131	2,560		394		3,324	32,462
Gravity	21,219	131	1,854		394		3,324	26,922
Pumping	4,834		706					5,540
Divisions								
Pryor	23,436	131	1,812		215		2,732	28,326
Eastern	923		42		179		592	1,736
Fly Creek	1,694		706					2,400
Milk River	29,732		16,151	5,567			95,030	146,480
Chinook division	1,941		2,148	1,223			51,479	56,791
Malta division	21,833		13,583	3,181			29,113	67,710
Glasgow division	5,958		420	1,163			14,438	21,979
Sun River	39,919	429	38,026	6,881			28,596	113,851
Sun River Slope	700		12,900	1,100			2,300	17,000
Big Coulee				356			1,962	2,318
Greenfields	24,734		21,915	4,771			20,701	72,121
Mill Coulee	3,000		3,000	500			2,000	8,500
Fort Shaw	11,485	429	211	154			1,633	13,912
Montana—North Dakota:								
Lower Yellowstone	13,735		2,067	986		95	42,466	59,349
Montana	7,088		1,060	846		95	29,939	39,028
North Dakota	6,647		1,007	140			12,527	20,321
Divisions—								
Gravity	13,475		2,011	704		50	40,801	57,041
Pumping	260		56	282		45	1,665	2,308
Nebraska—Wyoming:								
North Platte	136,063		17,264	1,771			83,485	238,583
Interstate division	83,697		1,443	529			29,264	114,933
Nebraska	81,086		1,143	529			28,985	111,743
Wyoming	2,611		300				279	3,190
Fort Laramie division	44,847		15,511	1,242			45,700	107,300
Nebraska	8,708		7,200				38,325	54,233
Wyoming	36,139		8,311	1,242			7,375	53,067
Northport division, Nebraska	7,519		310				8,521	16,350
Nevada: Newlands	31,741	4,061	26,321		23,877	20,000	53,000	159,000
Carson division	27,721	4,061	4,701		4,877	2,500	39,140	83,000
Truckee division	4,020		2,120			2,000	13,860	22,000
Pyramid division			4,500		²⁶ 19,000	1,500		25,000
Loveloek division			15,000			14,000		29,000
New Mexico: Carlsbad	45						24,946	24,991
New Mexico-Texas:								
Rio Grande	1,500	100	700	1,000			146,700	150,000
New Mexico	1,500	100	700	1,000			82,700	86,000
Texas							64,000	64,000
Divisions—								
Rincon		20		700			15,900	17,000
Leasburg	600	40	640	200			29,950	31,000
Mesilla	900	40	60	100			45,850	47,000
El Paso							55,000	55,000
North Dakota:								
Williston	254	139		23			10,337	10,753
Oregon:								
Umatilla	5,413		2,376			3,319	17,192	28,300
East division	3,030					1,407	12,563	17,000
West division	2,383		2,376			1,912	4,629	11,300
Oregon-California: Klamath	5,779		20,934				141,184	167,897
Oregon	2,917		1,327				103,636	107,880
California	2,862		19,607				37,548	60,017
Divisions—								
Main	²⁶ 2,752						39,668	42,420
Tule Lake	3,027		20,934				239	24,200
Pumping							20,595	20,595
Langell Valley							20,782	20,782
Bonanza Springs							5,900	5,900
Lower Klamath Lake							²⁷ 54,000	54,000
South Dakota: Belle Fourche	37,732		12,008	667			45,886	96,293
Utah: Strawberry Valley	1,953						²⁸ 51,936	²⁸ 53,889
High Line	1,953						²⁸ 19,417	²⁸ 21,370
Spanish Fork							22,519	22,519
Springville-Mapleton							10,000	10,000

²⁶ Three thousand acres to be allotted to about 600 Indians; remainder of land to be sold in accordance with act (33 Stat. 225).

²⁷ Includes some public land, but distribution not known.

²⁸ The 1,500 acres of irrigable area formerly included in the proposed Santaquin pumping district under the High Line division, have been eliminated from this report.

Engineering data for projects when completed—Continued

IRRIGABLE AREA, PRESENT STATUS—Continued

State, project, and division	Public land			State land unsold	Indian land	Private land		Total
	Entered	Open	With-drawn			Rail-road, unsold	Other	
Washington:	<i>Acres</i>	<i>Acres</i>	<i>Acres</i>	<i>Acres</i>	<i>Acres</i>	<i>Acres</i>	<i>Acres</i>	<i>Acres</i>
Okanogan.....	116						7,473	7,589
Gravity.....								6,414
Pumping.....								1,175
Yakima.....	7,358		13,688	5,939	241	21,729	291,032	339,987
Sunnyside.....	2,627			30	241		104,702	107,600
Tieton.....	2,048			4			29,048	32,000
Roza.....	120		1,523	2,067		11,310	43,330	58,350
Moxee.....	1,663		775	1,332		2,783	30,197	36,750
Kittitas ²⁹			4,990	1,406		3,936	59,955	70,287
Kennewick.....	900		6,400	1,100		3,700	22,900	35,000
Wyoming:								
Riverton.....			69,000		1,000		30,000	100,000
Shoshone.....	62,517	2,293	125,692	18,451		687	8,760	218,400
Montana. Frannie division.....	87			4				91
Wyoming:								
Garland division.....	40,065	891	711	352			1,981	44,000
Frannie division.....	22,365	1,402	2,969	995		687	1,491	29,909
Willwood division.....			14,312	500			788	15,600
Heart Mountain division.....			33,100	3,200			2,500	38,800
Oregon Basin division.....			74,600	13,400			2,000	90,000
Total primary projects.....	629,517	11,075	505,455	56,690	33,712	45,830	1,769,307	3,051,586

²⁹ Distribution estimated.

SUMMARY OF CONSTRUCTION RESULTS, JUNE 30, 1924

Items	To June 30, 1924		To June 30, 1923		Increase	
Reservoir capacity available (original).....	Acre-feet 10,018,993		Acre-feet 9,758,000		Acre-feet 260,993	
CANALS, DITCHES, AND DRAINS						
	Miles		Miles		Miles	
Canals over 800 second-feet capacity.....	511		511		-----	
Canals 301 to 800 second-feet capacity.....	713		686		27	
Canals 50 to 300 second-feet capacity.....	2,271		2,185		86	
Canals less than 50 second-feet capacity.....	9,087		8,729		358	
Total canals.....	12,582		12,111		471	
Waste-water ditches.....	982		931		51	
Drains, open.....	1,499		1,236		263	
Drains, closed.....	212		196		16	
Total.....	2,693		2,363		330	
Grand total.....	15,275		14,474		801	
TUNNELS						
Number.....	105		103		2	
Length (feet).....	140,614		145,810		804	
STORAGE AND DIVERSION DAMS						
	Cubic yards		Cubic yards		Cubic yards	
Masonry.....	2,238,901		2,151,361		87,540	
Earth.....	12,798,419		11,935,701		862,718	
Rockfill and crib.....	1,679,865		1,416,133		263,732	
Total.....	16,717,185		15,503,195		1,213,990	
DIKES AND LEVEES						
Length and volume.....	Feet 1,010,372	Cubic yards 5,204,264	Feet 757,305	Cubic yards 5,002,681	Feet 253,067	Cubic yards 201,583
	Concrete	Wood	Concrete	Wood	Concrete	Wood
CANAL STRUCTURES						
	Number	Number	Number	Number	Number	Number
Costing over \$2,000.....	1,385	229	1,306	218	79	11
Costing from \$500 to \$2,000.....	3,030	909	2,874	869	156	40
Costing \$100 to \$500.....	16,275	10,010	14,120	8,968	2,155	1,042
Costing less than \$100.....	29,096	74,127	25,524	71,627	3,572	2,500
Total.....	49,786	85,275	43,824	81,682	5,962	3,593
Grand total.....	135,061		125,506		9,555	
	Number	Length	Number	Length	Number	Length
BRIDGES						
		Feet		Feet		Feet
Steel.....	112	9,124	108	8,664	4	460
Combination.....	422	12,776	414	12,542	8	234
Wood.....	9,298	216,083	8,217	190,438	1,081	25,645
Concrete.....	361	4,934	354	4,838	7	96
Total.....	10,193	242,917	9,093	216,482	1,100	26,435
CULVERTS						
Concrete.....	3,198	154,512	2,758	135,267	440	19,245
Metal.....	2,280	80,476	2,165	75,461	115	5,015
Terra cotta.....	2,006	80,127	1,901	76,777	105	3,350
Wood.....	4,228	108,603	4,189	101,801	39	6,802
Total.....	11,712	423,718	11,013	389,306	699	34,412
PIPE						
	Linear feet		Linear feet		Linear feet	
Concrete.....	915,295		806,851		108,444	
Metal.....	319,608		275,027		44,581	
Terra cotta (tile).....	1,612,296		1,472,784		139,512	
Wood.....	660,596		602,136		58,460	
	3,507,795		3,156,798		350,997	

Summary of construction results, June 30, 1924—Continued

FLUMES	Number	Length	Number	Length	Number	Length
		<i>Feet</i>		<i>Feet</i>		<i>Feet</i>
Concrete.....	100	71, 940	99	66, 294	1	5, 646
Metal.....	1, 509	212, 717	1, 260	196, 991	249	15, 726
Wood.....	2, 546	494, 773	2, 455	482, 890	91	11, 883
Total.....	4, 155	779, 430	3, 814	746, 175	341	33, 255
	Concrete	Wood	Concrete	Wood	Concrete	Wood
CANALS LINED						
Length (miles).....	412. 02	4. 12	394. 20	4. 12	17. 82	-----
Total.....	416. 14		398. 32		17. 82	
	<i>Number</i>		<i>Number</i>		<i>Number</i>	
BUILDINGS						
Offices.....	101		99		2	
Residences.....	730		715		15	
Power plants.....	33		31		2	
Pumping stations.....	178		167		11	
Barns, storehouses, etc.....	575		561		14	
Total.....	1, 617		1, 573		44	
	Number	Depth	Number	Depth	Number	Depth
WELLS						
Number and depth.....	629	61, 475	586	58, 393	43	3, 082
	<i>Miles</i>		<i>Miles</i>		<i>Miles</i>	
COMMUNICATIONS						
Roads.....	1, 044		1, 038		6	
Railroads.....	83		83		-----	
Telephone lines.....	3, 349		3, 284		65	
Transmission lines.....	1, 395		1, 157		238	
Total.....	5, 871		5, 562		309	
POWER DEVELOPED						
Water and steam, horsepower.....	64, 159		64, 159		-----	
	<i>Cubic yards</i>		<i>Cubic yards</i>		<i>Cubic yards</i>	
EXCAVATION						
Class 1, earth.....	212, 634, 034		195, 530, 837		17, 103, 197	
Class 2, indurated material.....	12, 340, 294		11, 822, 513		517, 781	
Class 3, rock.....	9, 965, 851		9, 520, 940		444, 911	
Total.....	234, 940, 179		216, 874, 290		18, 065, 889	
Riprap (cubic yards).....	2, 378, 337		2, 316, 171		62, 166	
Paving (square yards).....	962, 682		939, 411		23, 271	
Concrete (cubic yards).....	3, 450, 251		3, 273, 745		176, 506	
Cement (barrels).....	3, 408, 191		3, 307, 152		101, 039	

POWER AND PUMPING

Power plants operated on Bureau of Reclamation projects during the fiscal year 1923-24

Project	Name of plant	Type of plant	Station capacity	Number of units	Head	First cost of plant	Cost of operation	Estimated depreciation	Cost per kilowatt hour exclusive of depreciation	Output	Distribution of power generated (kilowatt hours)				Gross power sales
											Sold to consumers	Used for irrigation purposes	Used for other purposes	Losses	
										Kilowatt-hours	Kilowatt-hours	Kilowatt-hours	Kilowatt-hours		
Boise	Boise River ¹	Hydroelectric	Kw-a		<i>Feet</i>										
Minidoka	Minidoka	do	1,875	3	30	\$167,905.37	\$12,183.61	\$5,540.00	\$0.0020874	5,836,028	5,725,035	110,993			\$11,000.00
Do ²	American Falls (2 plants)	do	7,000	5	48.21	455,317.40	22,771.25	15,012.00	.0004704	48,400,426	20,464,920	24,260,980	773,430	2,901,096	109,808.00
Newlands	Lahontan	do	1,875	3	45	141,886.01	6,272.00	5,000.00	.00108	5,796,200	5,709,275	33,400	53,525		18,783.18
Williston	Williston	Steam-electric	1,150	4	105	175,000.00	61,291.23	3,000.00	.00325	1,886,487	1,085,430	316,586	383,535	100,936	58,536.53
North Platte	Lingle	Hydroelectric	750	2	105	98,988.50	22,742.08	16,800.00	.00794	2,862,845	1,162,580		1,155,590	544,675	31,026.85
Okanogan	Power Plant No. 1, ³	do	187	1	108	11,923.44									
	Power Plant No. 2, ³	do	187	1	55	13,931.42									
Rio Grande	Elephant Butte No. 2	do	187	1	147.55	8,440.50	2,140.00	253.00	.0903	23,700	625		23,075		50.00
Salt River	Arizona Falls	do	1,060	2	19	109,500.73	8,923.55	5,475.04	.004125	3,029,800					
	Chandler	do	600	1	40	91,990.84	17,174.30	4,599.54	.005257	3,347,450					
	Crosscut	do	5,250	6	111	755,147.29	31,385.71	37,757.36	.00188	13,333,200	146,631,376	11,671,154	5,414,298	9,815,844	546,882.90
	Roosevelt	do	11,750	6	80-225	870,317.94	67,957.25	43,515.90	.001527	44,502,300					
	South Consolidated	do	1,600	2	23	163,139.60	10,070.91	8,156.98	.004221	6,036,100					
Shoshone	Shoshone	do	2,000	2	120-220	565,454.00	9,466.68	14,748.00	.0058	1,645,666	215,902		1,068,167	361,597	8,114.63
Strawberry Valley	Spanish Fork	do	1,000	2	123.5	60,724.80	16,489.32	3,033.72	.0115	1,437,000	1,205,494		157,121	74,385	24,460.65
Yakima Storage	Tieton No. 1 ³	do	270	2	45	40,000.00		11,510.88							
Yakima	Tieton No. 2	do	1,000	2	74	76,758.16	9,644.50	34,436.50	.00250	3,850,000			3,724,000	126,000	
Suppnyside	Rocky Ford	do	187	1	73	23,000.00	2,065.00	1,056.00	.00286	720,300			720,300		
Riverton	Pilot Butte	do	1,000	1	90-106	(⁷)									

¹ Under a contract between the United States and the Idaho Power Co., dated Apr. 1, 1923, the output of this plant is delivered to the company on an exchange basis.

² Plant acquired but not operated during fiscal year 1923-24. Operation and maintenance shown is for repair to plant.

³ Not operated during fiscal year 1922-24.

⁴ Book value at present \$1,889.66.

⁵ This amount includes cost of transmission lines and transformers to value of \$9,000.

⁷ Estimated \$124,200. Not completed.

* All five plants supply the same distributing system.

Pumping plants operated on Bureau of Reclamation projects during fiscal year 1923-24

Project	Name of plant	Type of pump- ing unit	Plant capac- ity	Num- ber of units	Net lift	First cost of plant	Cost of operation	Estimated deprecia- tion	Energy used for pumping	Acre-feet pumped	Cost, per acre-foot without deprecia- tion.	
											Per acre-foot	Per foot lift
Grand Valley Huntley	Price Stub	V. T. D. C.	Horse- power		<i>Feet</i>	\$46,097.83	\$580.00	\$1,000.00	<i>Kilowatt-hour</i>	6,170	\$0.0094	\$0.00303
	Ballantine	V. T. D. C.	125	1	31	73,833.32	1,163.32	2,000.00		9,002	1.29	.00287
	Ballantine auxiliary	O. E. D. C.	620	2	45	71,103.86	1,755.86	3,500.00		1,334	1.31	.029
	A-4 Raise ¹	Scoop wheel	25	1	3.5	3,328.42	249.63		36,515			
	Pumping station No. 1	V. M. D. C.	2,760	5	29.2	186,020.06		4 19,380.00	9,749,043	218,998		
Mindoka	Pumping station No. 2	V. M. D. C.	2,400	4	30.2	184,920.00	3 23,515.58		5 14,512,937	183,971		
	Pumping station No. 3	V. M. D. C.	1,560	3	29.9	103,106.95				111,993		
	Beersch Lake	V. M. D. C.	200	2	19.8	32,947.72		1,647.39	619,950			
	C-2 pumping station ¹	Scoop wheel		1	2.5				16,279			
	114 pumping station ¹	H. M. D. C.	7.5	1	7	2,803.97		182.26	8,536			
Williston	1812 pumping station ¹	H. M. D. C.	5.0	1	4	1,008.76		65.57	6,166			
	1817 pumping station ¹	Scoop wheel	10.0	1	4.8	3,634.71		272.62	9,270			
	West End pumping station ¹	H. M. D. C.	150	2	21.25	18,745.61		817.30	448,245			
	Pumping station No. 1	S. T. D. C.	450	2	56	8,850.00	2,605.52	300.00	42,210	492	5.30	.0047
	Pumping station No. 2	H. M. D. C.	175	2	26.6	13,065.00	4,959.87	800.00	70,749	570	8.70	.327
North Platte	Pumping station No. 3	H. M. D. C.	405	3	32	39,647.00	10,454.62	1,000.00	121,171	1,252	8.35	.261
	Pumping station No. 4	H. M. D. C.	100	1	27.25	8,821.00	2,565.88	500.00	35,209	294	8.52	.313
	Dutch Flat Drain No. 1	V. M. D. C.	30	1	52	11,249.27			99,350	133		
	Dutch Flat Drain No. 2	V. M. D. C.	30	1	30	11,249.27				327.8		
	Dutch Flat Drain No. 3	V. M. D. C.	40	1	47	11,249.27				136.2		
Okanogan	Duck Lake (old)	H. M. D. C.					2,088.74	1,700.00			3.19	.08
	Duck Lake (new) ⁴	H. M. D. C.	50	1	55	17,201.92	2,218.63		121,786	1,471.6	1.50	.0273
	Government Well, No. 1 and No. 2 ⁵	V. M. D. C.	30	2	45-51	18,588.21	2,498.62		57,463	338.2	7.40	.1542
	Robinson Flat ³	H. M. D. C.	400	2	188	30,077.24	12,110.64		651,000	1,775.1	6.82	.0364
	Salmon Lake ⁵	G. E. D. C.	275	2	18-23	17,842.16	7,270.04			1,088	6.68	.3339

¹ Operated by Minidoka irrigation district.² Total for all stations operated by Minidoka irrigation district.³ Includes cost of power not formerly included.⁴ Total for three South Side stations.⁵ Total for stations 2 and 3.⁶ Average for all three stations.⁷ Barge replaced by permanent land station.⁸ Cost to date \$27,954. Estimated cost, when complete \$30,000.⁹ Two pumping units transferred from barge and one new unit of
15 second-foot capacity has been purchased. Capacity of motors when third unit is installed, 345 horsepower.¹⁰ Power supplied by Washington Water Power Co.

Pumping plants operated on Bureau of Reclamation projects during fiscal year 1923-24—Continued

Project	Name of plant	Type of pump- ing plant	Plant capac- ity	Num- ber of units	Net lift	First cost of plant	Cost of operation	Estimated deprecia- tion	Energy used for pumping	Acre-feet pumped	Cost per acre-foot without deprecia- tion	
											Per acre-foot	Per foot lift
Salt River	Chandler division ⁹	{ 10 V. M. D. C.	Horse- power	12	35.10	\$148,084.21	\$13,241.82	\$10,365.89	<i>Kilowatt-hour</i> 2,345,296	31,225	\$0.424	---
	Hightline Pumping Plant ⁹	{ 1 H. M. D. C.	920	4	47	91,038.90	13,483.87	4,551.94	3,331,283	34,978	.3855	---
	Tempe Pumping Plant ⁹	{ H. M. D. C.	900	1	45	5,729.84	5,637.68	401.09	877,760	8,907	.633	---
	Mesa division ⁹	{ V. M. D. C.	725	17	22.08	145,047.84	5,762.31	10,153.95	1,235,720	20,941	.2754	---
	Laveen division ⁹	{ V. M. D. C.	225	3	11	15,890.85	427.11	1,112.30	135,345	2,150	.20	---
	Phoenix division ⁹	{ V. M. D. C.	455	22	55.65	133,791.11	10,758.06	9,365.38	2,035,806	14,205	.767	---
	Tempe division ⁹	{ H. M. D. C.	75	1	30	12,186.00	25.28	8,530.20	21,756	120	.21	---
	Salt River division ⁹	{ V. M. D. C.	795	21	30.7	175,240.44	13,684.86	12,266.83	2,472,273	34,609	.395	---
	San Francisco ⁹	{ V. M. D. C.	50	1	38	29,978.90	410.53	2,997.90	98,156	929	.442	---
	Tolleson division ⁹	{ V. M. D. C.	650	20	37	168,360.75	11,358.89	11,783.25	2,515,604	29,365	.3868	---
	Grand View	{ 1-V. T. D. C.	365	3	35-78	72,500.00	3,200.00	3,120.00	---	13,603	.235	\$0.00412
	Hillcrest	{ 2-H. M. D. C.	35	1	103	5,800.00	126.50	300.00	---	453	.279	.0027
	Little Snipes Mountain	{ V. T. D. C.	5	1	50	1,162.00	45.31	45.00	---	80	.563	.011
Yuma	Outlook	{ V. T. D. C.	800	2	110	92,000.00	3,413.76	2,480.00	---	16,256	.210	.0019
	Prosser	{ H. T. D. C.	195	1	106	31,968.00	1,430.00	1,590.00	---	3,544	.403	.0038
	Snipes Mountain	{ V. T. D. C.	550	2	200	48,500.00	2,748.79	1,800.00	---	7,133	.800	.0019
	Spring Creek	{ H. T. D. C.	160	1	90	28,056.00	1,330.84	1,500.16	---	3,653	.364	.004
	"B" Lift	{ 1-V. M. D. C.	1,100	3	69	159,524.11	32,856.64	600.00	924,000	5,892.5	5.56	.081
	Reservation ¹²	{ 2-H. M. D. C.	110	2	0-6	6,775.60	4,634.62	500.00	---	760	6.10	2.65
	G. E. D. C.	{ 2-G. E. D. C.	275	3	11.53	191,066.91	21,907.21	2,500.00	---	50,608	.433	.0382
	Valley Drainage	{ 1-H. M. D. C.	35	1	7	900.00	731.73	75.00	484,220	95	7.70	1.10
	West Yuma pumping	{ G. E. D. C.	220	2	31	49,857.72	151.19	1,000.00	---	1,980	.076	.00205
	Thomas Point	{ H. T. D. C.	75	1	51	32,000.00	---	---	(¹⁴)	---	---	---
Lower Yellow- stone Klamath	Dry Lake pumping plant ¹³	{ V. T. D. C.	---	---	---	---	---	---	---	---	---	---

Type V. M. D. C. = vertical motor-driven centrifugal pump. H. M. D. C. = horizontal motor-driven centrifugal pump. S. T. D. C. = steam turbine-driven centrifugal pump. V. T. D. C. = vertical hydraulic turbine-driven centrifugal pump. H. T. D. C. = horizontal hydraulic turbine-driven centrifugal pump. O. E. D. C. = oil-engine driven centrifugal pump. O. E. D. S. = oil-engine-driven screw pump. G. E. D. C. = gasoline-engine-driven centrifugal pump.

⁹ Cost of power is actual operation and maintenance power cost without depreciation charge and varies from \$0.00158 to \$0.0080.

¹⁰ In operation about three months only.

¹¹ Partially completed. Under construction.

¹² Operation and maintenance costs include major repairs to plant.

¹³ Not in regular operation fiscal year 1923-24.

¹⁴ Water power.

Principal contracts for sale of power in force June 30, 1924

Project	Name of contractor	Date of contract	Date of expiration	Maximum load	Rate per kilowatt-hour	Gross income fiscal year 1923-24	Remarks
Boise	Idaho Power Co.	Apr. 1, 1923	Mar. 31, 1926	Kilowatt		\$11,000.00	Load limited by water supply.
Minidoka	Amalgamated Sugar Co.	May 1, 1922	Feb. 28, 1926	7-67	Minidoka Standard	1,634.75	
	City of Burley	Jan. 15, 1920	Jan. 1, 1930	563-2,780	do	47,182.22	
	East End Electric Co.	do	do	227-1,938	do	23,963.86	
	Ferry Light & Power Co.	Jan. 23, 1918	Jan. 23, 1928	15	do	1,039.68	
	Minidoka Irrigation District	Mar. 12, 1919	Mar. 12, 1929	15	do	963.89	
	Paul Electric Co.	Dec. 2, 1916	Req. of irrig	80-150	do	3,886.16	
	Rural Electric Co.	Feb. 4, 1924	Mar. 31, 1934	11-15	Minidoka Standard	6,070.59	
	Unity Light & Power Co.	Mar. 19, 1917	Mar. 31, 1927	30-41	do	1,384.14	
	Village of Albion	Oct. 15, 1915	Mar. 19, 1927	30-41	do	2,632.88	Minimum monthly payment \$40.
	do	Sept. 18, 1916	Jan. 8, 1926	30-100	do	5,502.29	Power.
	Village of Declo	Oct. 26, 1920	do	200	\$1.25 per kilowatt-month	2,120.38	Heat.
	Village of Heyburn	Mar. 9, 1920	Nov. 1, 1930	30-41	Minidoka Standard	2,029.36	
	Village of Minidoka	Feb. 5, 1924	Jan. 1, 1934	272-1,032	do	1,486.39	
	59 small contracts		Apr. 1, 1934	50	do	436.45	Started to use energy May 21. Each less than \$1,000 annual revenue.
Newlands	Canyon Power Co.	July 10, 1914	Nov. 30, 1924	1,500	do	7,480.01	
					(\$0.0025 kilowatt-hour on gross output Apr. 1-Sept. 30.	18,581.83	{ Minimum monthly payments Apr. 1-Sept. 30 each year, \$1,200.
					\$0.0035 kilowatt-hour on gross output Oct. 1-Mar. 30.		
Williston	City of Williston	Sept. 25, 1922	Sept. 25, 1932	600	{ First 60,000 kilowatt-hours, 5 cents Next 40,000 kilowatt-hours, 3 cents Over 100,000 kilowatt-hours, 2 cents.	44,962.85	
North Platte	City of Mitchell, Nebr.	May 5, 1922	Apr. 30, 1924	135	North Platte Standard	10,386.43	
	City of Torrington, Wyo.	May 10, 1923	May 10, 1925	125	do	10,342.54	
	Platte Valley Power Co.	May 1, 1922	May 1, 1925	25	do	1,428.04	
	R. S. Morrow & Son	May 12, 1923	Dec. 31, 1924		{ 3 cents for first 10,000 kilowatt-hours; 2½ cents per kilowatt-hour for remaining.	3,771.75	

Principal contracts for sale of power in force June 30, 1924—Continued

Project	Name of contractor	Date of contract	Date of expiration	Maximum loan	Rate per kilowatt-hour	Gross income fiscal year 1923-24	Remarks
Shoshone	Security Land Co.	Feb. 9, 1922	Feb. 9, 1927	Kilowatt 25	North Platte Standard	\$1,337.28	
	Town of Lingle	Jan. 19, 1922	Oct. 26, 1924	25	do	2,296.63	
	Village of Morrill	May 2, 1922	Apr. 30, 1924	55	do	4,424.18	
	Town of Powell	Sept. 26, 1923	Sept. 30, 1926	75	Shoshone Standard	6,447.82	
	Cowley Gas Co.	May 18, 1923	June 2, 1933	15	do	808.82	
	C., B. & Q. R. Co.	June 1, 1923	Jan. 11, 1934	20	do	338.13	
	Nellie DeMaris	Jan. 24, 1923	Mar. 24, 1933	5	do	118.72	
	G. W. Gorrell	Apr. 1, 1924	Apr. 10, 1927	1	30 kilowatt-hours, 10 cents; balance, 4 cents+10 per cent.	8.80	
	G. V. Davis	May 20, 1924	June 27, 1927	1	30 kilowatt-hours, 10 cents; balance, 4 cents.	4.00	
	Spanish Fork City	Feb. 3, 1922	Feb. 5, 1925	200	Rated on maximum demand	9,868.60	
Strawberry Valley	Payson City	do	do	120	do	10,613.41	
	Salem City	do	do	40	do	1,594.18	
	Springville City	June 15, 1923	July 25, 1926	125	2 cents for first 10,000 kilowatt hours per month; 1/4 cent for from 10,000 to 25,000 kilowatt-hours; 1 cent over 25,000 kilowatt-hours.	1,971.89	
	Castilla Hot Springs Co.	Sept. 6, 1919	Sept. 6, 1924	10	Strawberry Valley Standard	201.11	Minimum monthly charge, \$15.
	Mapleton Light & Power Co.	Apr. 25, 1924	May 31, 1929	5	do	90.00	Minimum monthly charge, \$7.50.
	Keeler Electric Co.	Apr. 9, 1921	Apr. 9, 1926	5	do	91.02	Do.
	Joseph Lucas	Feb. 15, 1922	Feb. 21, 1925	5	9 cents per kilowatt-hour	30.44	Minimum monthly charge, \$3. Contract canceled Apr. 30, 1924.

DRAINAGE

Estimate of seepage and summary of drainage work to June 30, 1924

State and project	Constructed drains ¹		Estimated area damaged by seepage on June 30, 1924	Estimated area protected by constructed drains	Estimated area that will be protected when all drains authorized have been constructed
	Open	Closed			
	Miles	Miles	Acres	Acres	Acres
Arizona: Salt River ²	15.85	5.3			
Arizona-California: Yuma—					
Reservation.....	11.70	4.00		8,000	8,000
Yuma Valley.....	37.30			31,500	50,000
Colorado: Grand Valley—					
Project lands.....	28.39	.48	500	4,480	5,780
Grand Valley drainage district.....	38.30	1.00	29,000	10,000	10,000
Teller Institute.....	2.80			300	300
Frey drain.....	1.60			300	300
Orchard Mesa.....	3.57		1,400	600	1,450
Uncompahgre ³		96.00	16,200	9,400	9,400
Idaho: Boise—					
Riverside irrigation district.....	44.10		350	11,400	11,400
Pioneer irrigation district.....	78.50	.40	300	30,000	30,000
Nampa-Meridian irrigation district.....	45.76		400	51,000	51,000
Other parts.....	53.12	.10	4,000	8,000	12,000
King Hill ⁴88		200	800	800
Minidoka—					
Gravity division.....	110.70		1,300	30,000	30,000
Pumping division.....			2,000		
Montana: Huntley	16.73	50.50	1,200	21,500	21,500
Milk River—					
Malta division.....	2.30		2,300	300	300
Glasgow division.....			200		
Sun River—					
Fort Shaw division.....			2,508		
Greenfields division.....	16.30		2,000	7,000	9,500
Montana-North Dakota: Lower Yellowstone	4.50	1.10	4,000	1,600	1,600
Nebraska-Wyoming: North Platte—					
Interstate division.....	35.17	14.60	2,800	6,000	8,200
Interstate division ⁴	43.26				
Fort Laramie division.....	111.76		800	2,000	16,000
Northport division.....	5.81		160	1,500	1,500
Nevada: Newlands—					
Carson division.....	160.20	3.99	8,000	76,900	⁵ 88,483
Truckee division.....	11.59		200	3,707	⁵ 13,940
New Mexico: Carlsbad.....	11.14	3.65	5,500	5,031	5,031
New Mexico-Texas: Rio Grande—					
Rincon division.....	20.10		6,000	6,000	17,000
Leasburg division.....	67.10		800	30,000	31,000
Mesilla division ⁶	119.30		900	15,000	47,000
El Paso division ⁷	119.60		2,000	49,000	55,000
Oregon:					
Umatilla.....	11.50		500	2,450	3,000
Klamath.....	103.00	8.00	2,000	28,700	30,000
South Dakota: Belle Fourche			4,871		
Utah: Strawberry Valley ⁸	18.90	71.50	8,500	11,422	19,922
Washington: Yakima—					
Sunnyside division ⁸	82.85	95.07	10,000	50,357	50,357
Tieton division ⁸	7.50	2.30	200	2,400	2,400
Wyoming: Shoshone—					
South Garland division.....	29.55	107.63	1,000	20,400	21,500
North Garland division.....	60.62	2.27	2,300	9,600	12,000
West Garland division.....	1.02	1.24		500	500
Frannie division.....	71.48		2,700	9,500	22,000
Total.....	1,603.85	469.13	127,089	586,647	698,163

¹ Surface drains and waste ditches not included.

² Drainage, including 99 drainage pumping stations constructed by water users' associations, has produced marked effect in lowering the water table in certain areas.

³ Constructed by land owners, water users, or drainage districts.

⁴ Outlet channels, of which 7.74 miles were built by the United States as a part of the project drainage, 17.35 miles by the United States under cooperative contracts, 16.17 miles by the Farmers' Irrigation District, and 2 miles by the Morrill Drainage District.

⁵ Area benefited.

⁶ Includes 1.7 miles of temporary outlet abandoned.

⁷ Includes 0.4 mile of temporary outlet to be abandoned.

⁸ All drainage work done by county drainage engineer through drainage improvement districts.

SETTLEMENT DATA, 1923

State and project	Farms		Towns		Number of schools
	Number	Population	Number	Population	
Arizona: Salt River	5,500	36,000	12	51,000	63
Arizona-California: Yuma	1,207	3,800	5	5,730	16
California: Orland	703	1,945	1	1,700	10
Colorado:					
Grand Valley	396	1,185	6	11,246	21
Uncompahgre	1,694	6,097	3	7,450	26
Idaho:					
Boise	3,600	10,800	8	36,279	28
King Hill	184	598	4	1,525	6
Minidoka	2,453	7,571	6	7,970	22
Montana:					
Huntley	547	1,015	8	530	8
Milk River	211	506	15	7,675	35
Sun River	389	817	4	354	17
Montana-North Dakota: Lower Yellowstone	373	1,265	8	2,415	13
Nebraska-Wyoming: North Platte	2,019	6,179	18	18,900	94
Nevada: Newlands	788	2,737	5	2,509	11
New Mexico: Carlsbad	388	2,128	4	3,440	12
New Mexico-Texas: Rio Grande	3,743	15,925	12	111,883	73
North Dakota: Williston	63	224	2	4,500	6
Oregon: Umatilla	540	1,491	4	1,280	6
Oregon-California: Klamath	580	1,800	5	7,000	24
South Dakota: Belle Fourche	1,035	2,035	5	2,350	25
Utah: Strawberry Valley	2,741	6,500	12	16,000	23
Washington:					
Okanogan	458	1,430	3	2,609	7
Yakima-Sunnyside	3,181	10,128	11	7,250	41
Yakima-Tieton	1,305	3,453	8	23,000	10
Wyoming:					
Riverton			2	2,500	2
Shoshone	838	2,025	5	1,705	7
Total	34,936	127,654	206	337,873	609

State and project	Number of churches	Banks			Number of depositors
		Number	Capital stock	Deposits	
Arizona: Salt River	65	15	\$1,600,000	\$25,000,000	40,000
Arizona-California: Yuma	24	5	280,000	3,378,330	6,970
California: Orland	7	2	171,000	1,107,000	3,000
Colorado:					
Grand Valley	28	6	452,300	3,237,000	9,850
Uncompahgre	27	6	505,136	3,232,826	11,250
Idaho:					
Boise	58	11	1,750,000	15,295,000	30,000
King Hill	5	1	20,000	290,000	1,000
Minidoka	29	4	210,000	1,250,000	6,000
Montana:					
Huntley	9	2	50,000	155,000	800
Milk River	30	20	709,500	3,736,600	9,900
Sun River	11	3	65,000	212,000	650
Montana-North Dakota: Lower Yellowstone	15	4	100,000	308,645	1,850
Nebraska-Wyoming: North Platte	60	22	720,000	6,789,600	19,930
Nevada: Newlands	8	1	75,000	800,000	1,600
New Mexico: Carlsbad	12	1	25,000	100,000	300
New Mexico-Texas: Rio Grande	115	9	2,675,000	27,323,442	30,000
North Dakota: Williston	7	1	100,000	1,500,000	3,000
Oregon: Umatilla	9	1	25,000	360,000	1,200
Oregon-California: Klamath	11	5	350,000	4,290,000	8,200
South Dakota: Belle Fourche	9	6	150,000	2,145,000	5,000
Utah: Strawberry Valley	25	4	210,000	1,429,354	7,000
Washington:					
Okanogan	8	5	155,000	1,000,000	2,350
Yakima-Sunnyside	30	12	360,000	2,281,606	9,348
Yakima-Tieton	4				
Wyoming:					
Riverton	7	5	135,000	1,000,000	2,800
Shoshone	8	3	85,000	466,000	2,300
Total	621	157	10,977,936	106,537,203	214,298

CROP STATISTICS

Summary of crop reports on Government reclamation projects in 1923—Area (acres)

State and project	Cereals				Other grain and seed						Hay and forage						Total		
	Barley	Corn, In-	Oats	Rye	Wheat	Total	Alfalfa seed	Clover seed	Sorghum	Flaxseed	Millet seed	Total	Alfalfa hay	Clover hay	Other hay	Corn fodder		Other forage	Pasture
Arizona: Salt River	11,166	972	3,098		21,428	36,664	14,774					14,774	49,495		434		17,631	58,957	126,517
Arizona-California: Yuma	455				1,516	1,971	15,395		4,477			19,872	21,915		480			4,444	26,839
California: Orland	617				139	756			1,428			1,428	6,212		316	30	91	4,299	10,948
Colorado:																			
Grand Valley		876	582		915	2,373	170					170	5,316		36	541	3,532	312	9,737
Uncompahgre	139	3,307	5,235		10,299	18,980	545	72				617	24,791	263	366	157	213	3,999	29,789
Idaho:																			
Boise	3,175	9,800	2,650	210	26,900	42,735	1,020	6,000	40		17	7,677	38,523	8,150	95	700	6,425	53,893	
King Hill	62	189	60	4	357	672	419	20				439	3,850	20	93	80		805	4,848
Mindoka																			
Gravity division	1,423	2,973	1,975	8	7,364	13,743	2	413				415	23,082	2,117	116	301		5,389	31,205
Pumping division	1,164	472	903		8,834	11,373	20	914				934	14,926	342	54	52	2	2,293	17,069
Montana:																			
Huntley	264	1,319	1,118	6	3,075	5,782	52	126				178	5,463	70	201	132		17,124	22,980
Milk River	84	453	812		1,707	3,056	185			3	25	213	3,899	4	11,087	160		228	15,978
Sun River																			
Fort Shaw division	89	104	397		819	1,409		10				10	5,225	104	140	26		909	6,404
Greenfields division	635	47	1,271		12,957	14,910		9				19	2,119	33	725	20		2,300	5,197
Montana-North Dakota: Lower Yellowstone	400	1,196	1,253		2,986	5,835	99					200	6,356	142	453	357	20	442	7,770
Nebraska-Wyoming:																			
North Platte																			
Interstate division	5,175	21,054	4,817	148	4,928	36,152		180			175	355	25,471	269	324	185		2,613	28,872
Fort Laramie division	1,499	8,208	5,277		4,345	19,339		77			8	85	3,560	93	1,485	164		426	5,728
Northport division											143	150	197	17	296		53		563
Nevada: Newlands	451		70		3,116	3,637							30,117		180			5,690	35,987
New Mexico: Carlsbad		95			3,317	3,412	845		28			843	5,062					553	5,615
New Mexico-Texas: Rio Grande	89	5,806	363	13	2,198	8,529	387		31	5		423	31,354		805	3,340		5,870	41,369
North Dakota: Williston	18	24			21	112					1	1	395	39				153	940
Oregon: Umatilla	10	267	3		106	326							9,972		58	65		1,109	11,201

¹ Data are for calendar year (irrigation season) except on Salt River, where data are for corresponding "agricultural year," October, 1922, to September, 1923.

² This report covers 13,622 acres irrigated from reclamation works, and 5,640 acres irrigated from private flood systems. Duty of water from reclamation canals 0.50 acre-foot per acre.

³ Wheat and oats.

Summary of crop reports on Government reclamation projects in 1923—Area (acres)¹—Continued

State and project	Cereals						Other grain and seed						Hay and forage						Total	
	Barley	Corn, In-	Oats	Rye	Wheat	Total	Alfalfa seed	Clover seed	Sorghum	Flaxseed	Millet seed	Total	Alfalfa hay	Clover hay	Other hay	Corn fodder	Other forage	Pasture		
Oregon-California: Klamath— Main division Tule Lake division South Dakota: Belle Fourche Utah: Strawberry Valley Washington: Okanogan Yakima— Sunnyside division Tieton division Wyoming: Shoshone— Garland division Frammie division Total	537		1,224	545	2,618	4,924							14,986			1,061			10,044	26,091
	49		30		335	414							154			120			49	332
	949	8,826	4,591		1,379	15,745	331	82		28		441	26,768	272		592	120		5,799	33,551
	460	226	1,407		5,997	8,090	33	28				61	11,468			682	20	131	13,014	25,315
		15				15								500		38	9		60	607
	253	5,398	479	67	4,828	11,025							37,845		1,725	137	433	6,982	47,122	
	453	934	300		1,618	3,305		87				87	10,275			614	69	168	2,000	13,126
	707	286	1,619		4,605	7,217	8	473				18	499	14,980	131	96	180		2,556	17,943
	84	180	629		607	1,500	16	485				7	508	3,964		181	37		1,459	5,641
30,759	77,154	41,281	1,016	137,680	287,920	34,278	9,576	6,004	147	394	50,399	438,240	12,066	23,754	6,953	22,274	166,503	669,790		
State and project	Vegetables and truck						Fruits and nuts						Total							
	Beans	Onions	Potatoes (white)	Potatoes (sweet)	Truck	Total	Apples	Peaches	Pears	Prunes	Citrus fruit	Small fruit	Miscellaneous							
	209		556		6,669	7,434						1,863	95	1,305	3,293					
	190				485	675								135	2,404					
	5				91	96	3	43	4	261	262	1	1,830							
	550	8	819		174	1,551	178		67	1					245					
	837	1,391	9,079		510	11,817	1,893	87	7			80		2,068						
105	130	7,600		2,390	10,225	1,420	145	30	680		195		2,470							
		324		106	433	240	28	24	8		16	2	318							
	266	16	4,470	2	585	5,337	293				61		354							
	11	3	5,921		205	6,140					29		29							

Summary of crop reports on Government reclamation projects in 1923—Area (acres)¹—Continued

State and project	Miscellaneous				Duplicated	Total cropped	Irrigated, no crop					Total irrigated
	Beets, sugar	Cotton	Cane	Other	Total		Young alfalfa	Young fruit	Fall plowing	Miscellaneous	Duplicated	
Arizona: Salt River		66,090		1,159	67,249	188,070		426		16,094		204,590
Arizona-California: Yuma		22,110	20	253	22,383	53,050				220		53,270
California: Orland						12,420	350	1,833	760	265	128	15,500
Colorado:												
Grand Valley	1,960			219	2,179	12,110	781	17	519	122	679	12,870
Uncompahgre	2,862			214	3,076	64,010	3,096	26	3,743	139	6,714	64,520
Idaho:												
Boise						108,950	1,850	600	175	1,100	266	112,500
King Hill						6,710	254	147				7,020
Mindoka—												
Gravity division	4,582			44	4,626	55,680				3,826	206	59,300
Pumping division	5,864				5,864	42,000	831	12		3,000	673	45,170
Montana:												
Hundley	4,630			6	4,636	18,780					75	18,780
Milk River ²	69				69	19,220	125					19,270
Sun River												
Fort Shaw division	27				27	3,130						6,470
Greenfields division	7				7	20,250						2,620
Montana-North Dakota: Lower Yellowstone e.	3,110		48	36	3,194	17,780	70					17,850
Nebraska-Wyoming:												
North Platte—												
Interstate division	11,527		175	316	12,018	85,990	4,740		149	2,344	5,823	87,400
Fort Laramie division	2,838		307	307	3,269	31,120	2,539			1,320	2,539	32,440
Northport division	685		147		832	8,800	960				800	8,960
Nevada: Newlands						41,130				3,760		44,890
New Mexico: Carlsbad		16,331	178		16,509	22,630	140			1,290		24,060
New Mexico-Texas: Rio Grande	1	31,096	1,880	293	33,270	86,990				5,230		92,220
North Dakota: Williston	7			1	8	1,130	27			43	30	1,170
Oregon: Umatilla				44	44	12,350	747	41	29	183	20	13,330
Oregon-California:												
Klamath—												
Main division				343	343	31,900				4,100		36,000
Tule Lake division				240	240	1,020				680		1,700
South Dakota: Belle Fourche	565				565	50,290						4 30,550
Utah: Strawberry Valley	12,971			8,715	21,686	31,020	177	114		2,979		34,290

¹ Data are for calendar year (irrigation season) except on Salt River, where data are for "agricultural year," October, 1922, to September, 1923.² This report covers 13,622 acres irrigated from reclamation works and 5,640 acres irrigated from private flood systems. Duty of water from reclamation canals, 0.50 acre-foot per acre.³ Considerable area cropped without irrigation account excessive rainfall.⁴ Owing to wet year, only about three-fifths land in crops received irrigation water.

Washington:	Okanogan	470	4,550	18	571	12	9	5,160
Yakima—								
Sunnyside division	822	1,522	80,020	1,948	1,493	1,443	10,860	95,000
Tieton division	116	102	2,700	270	4,725		600	28,350
Wyoming:								
Shoshone—								
Garland division	1,925	1,925	30,130	431	15	78	29	30,460
Frannie division	209	209	8,090	185	7	81	103	8,190
Total	54,777	206,790	1,179,870	19,539	10,027	6,989	58,316	1,213,700

Summary of crop reports on Government reclamation projects in 1923 1—Total yields.

State and project	Cereals					Other grain and seed					Hay and forage							
	Barley	Corn, Indian	Oats	Rye	Wheat	Total	Al- falfa seed	Clover seed	Sor- ghum grain	Flax- seed	Mil- let seed	Total	Alfalfa hay	Clo- ver hay	Other hay	Corn fed- der	Other forage	Total
Arizona: Salt River	Bush. 397,000	Bush. 360,000	Bush. 380,875	Bush.	Bush. 571,400	Bush. 1,909,275	Bush. 29,548						Tons 232,701	Tons 21				Tons 232,722
Arizona-California: Yuma	10,800		31,615			42,415	66,367					190,627	53,881					34,576
California: Orland	12,000		2,500			14,500						77,600	28,100			94	350	28,964
Colorado:																		
Grand Valley		19,836	15,005		18,424	53,285	490					190	14,985		43	846		15,874
Uncompahgre	3,495	94,801	153,174		276,130	527,600	1,117	112				1,229	58,066	323	438	336	1,930	61,113
I Idaho:																		
Boise	98,425	53,900	106,000	3,990	1,008,750	1,271,065	5,100	39,600			340	45,040	138,683	13,040	285	8,400		160,408
King Hill	2,303	9,458	2,184	40	10,812	24,797	1,943	87				2,030	15,928	34	26	566		16,554
Mindoka																		
Gravely division	57,760	109,992	60,612	80	226,193	454,037	4	1,450				1,454	54,343	4,374	253	1,714		60,684
Pumping division	43,910	13,800	33,801		257,928	349,139	48	2,747				2,795	31,531	543	85	155		32,314
Montana:																		
Humley	7,283	30,049	30,552	60	39,265	127,209	52	361				413	11,428	79	186	437		12,130
Sun River	1,055	12,473	12,711		13,247	39,486	135				14	25	6,636	3	7,294	218		13,351
Fort Shaw division	2,452	2,885	10,649		11,654	27,640		30				50	7,233	93	107	100		7,383
Greenfields division	10,701	886	28,563		206,158	246,308		44			21	65	3,014	55	647	56		3,772
Montana-North Dakota:																		
Lower Yellowstone	7,148	30,573	31,358		27,067	97,046	92				707	799	11,569	174	618	1,392		13,753

¹ Data are for calendar year (irrigation season) except on Salt River project, where data are for corresponding "agricultural year," October, 1922, to September, 1923.

Summary of crop reports on Government reclamation projects in 1923—Total yields—Continued

State and project	Cereals					Other grain and seed					Hay and forage							
	Barley	Corn, Indian	Oats	Rye	Wheat	Total	Alfalfa seed	Clover seed	Sorghum grain	Flax seed	Millet grain	Total	Alfalfa hay	Clover hay	Other hay	Corn fodder	Other forage	Total
Nebraska-Wyoming:																		
North Platte--	Bush. 179, 149	Bush. 424, 536	Bush. 137, 225	Bush. 1, 553	Bush. 73, 561	Bush. 816, 024	Bush. 861	Bush. 60	Bush. 51, 559	Bush. 496, 561	Bush. 1, 297	Bush. 2, 158	Tons 45, 178	Tons 407	Tons 324	Tons 551	Tons 46, 460	
Interstate division.	38, 942	223, 770	182, 290	223	51, 559	496, 561	7	60	17, 813	189, 295	1, 717	1, 724	Tons 6, 347	Tons 141	Tons 1, 223	Tons 503	Tons 8, 214	
Fort Laramie division.	7, 885	133, 332	30, 042	223	17, 813	189, 295	7	60	70, 852	90, 164	1, 717	1, 724	Tons 8, 418	Tons 15	Tons 183	Tons 85	Tons 701	
Northport division.	16, 500		2, 812		70, 852	90, 164			6, 317	396, 994			Tons 84, 855		Tons 193		Tons 85, 048	
Nevada: Newlands.		966			5, 351	6, 317			396, 994				Tons 14, 139				Tons 14, 139	
Carlsbad.	2, 805	138, 249	8, 809	205	42, 056	192, 124	50, 970	570					Tons 102, 318	Tons 56	Tons 1, 434	Tons 1, 838	Tons 105, 590	
New Mexico-Texas: Rio Grande.	247	1, 065	1, 640		3, 129	3, 152					50	56	Tons 707	Tons 315	Tons 260		Tons 1, 398	
North Dakota: Williston	280	6, 900	125		3, 129	10, 434							Tons 36, 343		Tons 99	Tons 511	Tons 36, 953	
Oregon: Umatilla																		
Oregon-California:																		
Klamath--	15, 151		37, 984	5, 794	36, 522	95, 451							Tons 36, 653		Tons 1, 319		Tons 37, 972	
Main division.	1, 570		750		3, 995	5, 915							Tons 36, 653		Tons 143		Tons 701	
Tule Lake division.	20, 303	292, 593	105, 926		21, 527	440, 349	92	256			28		Tons 39, 347	Tons 117	Tons 604	Tons 141	Tons 40, 209	
South Dakota: Belle Fourche.	20, 468	6, 172	61, 070		210, 298	298, 008	17, 275	141					Tons 42, 325		Tons 1, 423	Tons 176	Tons 1, 980	
Utah: Strawberry Valley.																		
Washington:																		
Okanogan.		626				626							Tons 1, 148		Tons 65	Tons 16	Tons 1, 229	
Yakima--																		
Sunnyside division.	6, 555	232, 154	24, 520	997	137, 162	401, 388							Tons 150, 438		Tons 3, 013	Tons 1, 010	Tons 5, 759	
Tieton division.	15, 127	35, 138	13, 215		48, 555	112, 035		472					Tons 30, 400		Tons 928	Tons 201	Tons 2, 054	
Wyoming:																		
Shoshone--																		
Garland division.	18, 365	9, 026	48, 884		101, 460	177, 735	28	1, 617			340	1, 985	Tons 33, 060	Tons 113	Tons 79	Tons 934	Tons 34, 186	
Frankie division.	1, 036	3, 602	14, 904		6, 708	26, 250	20	1, 412			165	1, 597	Tons 6, 420		Tons 144	Tons 91	Tons 6, 655	
Total.	998, 715	2, 246, 802	1, 735, 680	12, 942	3, 552	391, 854	570, 282	49, 270	202, 430	820	3, 988	826, 790	1, 298, 212	19, 567	22, 607	20, 566	12, 158	1, 373, 110

Summary of crop reports on Government reclamation projects in 1923 ¹—Total yields—Continued

State and project	Fruits and nuts							Total
	Apples	Peaches	Pears	Prunes	Citrus fruit	Small fruit	Miscellaneous	
	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>
Arizona: Salt River	13,600	64,700	14,000	525,000	15,144,000		7,830,000	22,974,000
California: Orland					360,000		721,000	1,698,300
Colorado:								
Grand Valley	1,342,750	310,450	485,100			148,740		1,827,850
Uncompahgre	6,094,240		26,040					6,522,290
Idaho:								
Boise	15,620,000	1,450,000	240,000	5,440,000		1,170,000		23,920,000
King Hill	611,800	135,500	66,660	16,500		18,000	4,000	852,460
Minidoka—								
Gravity division	766,014					86,260		852,274
Pumping division						47,000		47,000
Montana: Sun River, Fort Shaw division						2,000		2,000
Nebraska: Wyoming, Northport division				90				90
New Mexico: Texas, Rio Grande	3,083,610	633,525	1,222,570	21,000				4,970,705
Oregon: Umatilla	1,352,000	36,450	62,000	21,500				1,521,950
Oregon-California: Klamath Main division							54,480	54,480
Utah: Strawberry Valley	893,700	2,036,200				107,585		3,007,485
Washington:								
Okanogan	1,003,336	121,650	369,450	14,240		137,255		1,645,931
Yakima								
Sunnyside division	171,342,000	7,921,000	18,881,000	2,847,650			2,488,680	203,480,330
Tieton division	87,642,000	4,590,075	9,900,500			1,065,000		103,197,575
Wyoming: Shoshone, Garland division	12,150					1,500		13,650
Total	289,787,200	17,319,550	31,267,320	8,888,800	15,504,000	2,783,340	11,098,160	376,648,370

¹ Data are for calendar year (irrigation season) except on Salt River project, where data are for corresponding "agricultural year" October, 1922, to September, 1923.

Summary of crop reports on Government reclamation projects in 1923¹—Total yields—Continued

State and project	Vegetables and truck				Miscellaneous			
	Beans	Onions	Potatoes, white	Potatoes, sweet	Total	Beets, sugar	Cotton	Cottonseed
	Bushels	Bushels	Bushels	Bushels	Bushels	Tons	Pounds	Pounds
Arizona: Salt River	2,060		46,353		48,423		26,048,800	52,097,600
Arizona-California: Yuma	3,950				3,950		7,636,560	13,890,000
California: Orland	50				50			
Colorado:								
Grand Valley	9,397	1,425	91,490		102,372	20,112		
Uncompagre	11,022	489,360	1,441,005		1,941,387	27,983		
Idaho:								
Boise	2,100	65,000	1,440,000		1,507,100			
King Hill		4,000	66,182	333	70,515			
Mindoka								
Gravity division	4,479	1,065	705,830		711,374	39,407		
Pumping division	225	1,000	1,639,045		1,040,270	69,936		
Montana:								
Huntley	945	256	4,720		5,921	62,213		
Milk River	405		6,804		7,209	554		
Sun River								
Fort Shaw division	317		25,492		25,809	219		
Greenfields division	3		7,746		7,749	40		
Montana-North Dakota: Lower Yellowstone	3,988		47,221		51,209	32,638		120
Nebraska-Wyoming:								
North Platte								
Interstate division	2,832		770,507		773,339	130,083		463
Fort Laramie division	1,395	5,008	172,512		179,115	35,160		274
Northport division	443		12,683		13,126	7,877		250
Nevada: Newlands		2,205	107,607		109,872			
New Mexico: Carlsbad				5,300	5,300			
New Mexico-Texas: Rio Grande	9,340	14,328	790	19,754	44,212		4,159,500	8,196,020
North Dakota: Williston		45	2,326		2,779	5	12,613,750	24,016,800
Oregon: Umatilla	408		10,441		10,441	71		7,257
Oregon-California:								
Klamath								
Main division			19,385		19,385			
Tule Lake division			2,376		2,376			
South Dakota: Belle Fourche			20,018		20,018	7,122		
Utah: Strawberry Valley			51,637		51,637	69,137		

Summary of crop reports on Government reclamation projects in 1923¹—Total crop values

State and project	Cereals						Other grain and seed					Total
	Barley	Corn, Indian	Oats	Rye	Wheat	Total	Alfalfa seed	Clover seed	Sorghum grain	Flax- seed	Millet	
Washington:					4,645		4,645					
Okanogan.....												
Yakima—												
Sunnyside division.....			7,382		1,473,688		1,481,070			1,686		
Tieton division.....					246,108		246,792			715		
Wyoming:												
Shoshone—												
Garland division.....			8,508	1,000	232,609		240,177			21,124		
Frammie division.....			94		10,174		10,268			2,080		
Total.....			67,573	605,436	8,089,494	25,387	8,787,890		50,458,610	548,162	98,200,420	8,864
Arizona: Salt River.....	\$312,648	\$68,040	\$139,410		\$771,408	\$1,291,506	\$354,576					\$354,576
Arizona-California: Yuma.....	9,175				33,750	42,925	637,120		\$111,225			748,345
California: Orland.....	7,800				2,375	10,175			77,600			77,600
Colorado:												
Grand Valley.....		15,463	9,492		17,037	41,992	3,235					3,235
Uncompahgre.....	3,489	51,027	72,476		232,558	359,550	6,420	\$485				6,905
Idaho:												
Boise.....	57,086	415,030	46,640	\$2,713	807,000	1,328,469	48,960		3,500	\$255		480,395
King Hill.....	1,688		1,211	40	10,720	21,413	18,119					18,682
Minidoka—												
Gravity division.....	43,320	82,494	27,275	40	169,645	322,774	29	13,050				13,079
Pumping division.....	32,932	13,800	15,210		193,446	255,388	346	24,723				25,069
Montana:												
Hunley.....	3,850	18,818	15,037	30	51,200	88,935	571					2,595
Milk River.....	369	6,986	4,954		13,334	25,643	2,038			\$28	60	2,126
Sun River.....												
Fort Shaw division.....	1,516	3,325	6,283		10,569	21,693		240				240
Greenfields division.....	6,421	17,138			185,542	209,837		211		41		252
Montana-North Dakota: Lower Yellowstone.....	4,288	18,343	12,543		26,568	61,742	1,104			1,484		2,588
Nebraska-Wyoming:												
North Platte—												
Interstate division.....	85,992	212,268	54,890	839	58,849	412,838		6,199			7,782	13,981
Fort Laramie division.....	18,692	111,886	72,915		41,247	244,740		432			346	778
Northport division.....	3,182	53,333	10,515	89	13,360	80,479	70				859	929

¹ Data are for calendar year (irrigation season), except on Salt River project, where data are for corresponding "agricultural year." October, 1922, to September, 1923.

Summary of crop reports in Government reclamation projects in 1923—Total crop values—Continued

State and project	Cereals						Other grain and seed					
	Barley	Corn, Indian	Oats	Rye	Wheat	Total	Alfalfa seed	Clover seed	Sorghum grain	Flax- seed	Millet	Total
Nevada: Newlands	\$12,705		\$1,631		\$74,385	\$88,721						\$53,315
New Mexico: Carlisbad		\$2,014	2,405		2,405	6,824	\$53,315					10,081
New Mexico-Texas Rio Grande	2,647	140,183	6,594	\$290	43,004	194,718	9,248		\$833			
North Dakota: Williston	74	852	574		200	1,700				\$100	\$67	167
Oregon: Umatilla	210	7,314	65		2,816	10,405						
Oregon-California: Klamath—												
Main division	12,727		19,448	4,172	52,571	88,918						
Tule Lake division	1,319		384		3,343	5,046						
South Dakota: Belle Fourche	9,168	176,498	33,984		20,601	240,251	1,002	\$2,313		70		3,385
Utah: Strawberry Valley	15,088	5,238	25,980		185,248	231,554	2,418	550				2,968
Washington: Okanogan—		751				751						
Yakima—												
Sunnyside division	3,687	208,939	11,770	847	123,446	348,689						
Tieton division	9,833	26,354	5,947		42,720	84,854		5,664				5,664
Wyoming: Shoshone—												
Garland division	13,223	4,513	24,442		81,167	123,345	336	11,319			510	12,165
Frannie division	746	1,801	7,452		5,365	15,364	240	9,884			248	10,372
	673,875	1,653,760	646,665	9,060	3,277,879	6,261,239	1,139,147	505,337	193,158	1,723	10,127	1,849,492

CROP STATISTICS

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State and project	Hay and forage					Vegetables and truck							
	Alfalfa hay	Clover hay	Other hay	Corn fodder	Other forage	Pasture	Total	Beans	Onions	Potatoes, white	Potatoes, sweet	Truck	Total
Arizona: Salt River	\$3,723,216		\$6,510		\$661,130	\$721,385	\$5,112,241	\$6,270		\$69,500		\$2,044,083	\$2,119,853
Arizona-California: Yuma	645,565		7,780			131,215	784,560	7,150				44,710	51,860
California: Orland	309,100		5,040	\$1,410	3,850	30,100	349,500	180				9,535	9,715
Colorado: Grand Valley	152,644		411	2,685		4,972	160,712	21,125	\$1,910	76,198		14,307	113,540
Uncompahgre	381,524	\$1,583	2,590	1,583	9,204	18,779	415,263	31,547	380,953	607,298		37,757	1,057,555
Idaho: Boise	1,040,114	97,800	2,137	50,400		128,500	1,318,951	6,300	78,000	722,000		307,925	1,114,225
King Hill	127,959	246	148	2,560		5,949	136,862		75	34,375	\$250	7,661	42,361
Mimodoka	434,741	34,991	1,265	25,705		63,017	559,719	17,916	1,917	352,915		33,311	406,059
Gravity division	252,242	4,344	425	1,550	252	25,735	284,548	900	1,800	519,522		12,735	534,957
Pumping division													
Montana: Huntley	69,100	449	1,052	1,926	311	46,199	119,037	2,390	385	3,290		7,301	13,366
Milk River	52,428	18	61,965	1,305		1,140	116,856	1,215		5,710		3,565	10,490
sum River													
Fort Shaw division	49,303	490	557	530		3,639	54,519	1,596			16,888	5,901	24,335
Greenfields division	24,112	275	3,587	294		2,390	30,658	15			5,422	3,596	9,033
Montana-North Dakota: Lower Yellowstone	92,550	870	3,090	8,904	600	2,669	108,683	9,970		28,332		10,655	48,957
Nebraska-Wyoming: North Platte													
Interstate division	316,244	1,628	3,240	826		20,904	342,842	7,080		346,728		15,398	369,206
Fort Laramie division	44,431	564	12,330	755		3,408	61,488	3,988	10,016	77,641		4,974	96,619
Northport division	3,137	88	1,101		425		4,751	1,329		6,341		3,098	10,768
Nevada: Newlands	848,546		1,930			41,583	892,059		1,544	96,900		74,226	172,670
New Mexico: Carlsbad	247,447					10,660	258,107				250	1,854	2,104
New Mexico-Texas: Rio Grande	1,957,070		16,663	14,925		69,688	2,058,346	34,087	17,268	870	23,517	510,260	586,002
North Dakota: Williston	9,204	504	3,800	1,300		1,594	16,402	1,224		1,865		4,730	7,991
Oregon: Umatilla	315,094		828	2,775		22,606	341,303			9,086		20,301	29,387
Oregon-California: Klamath													
Main division	293,224		10,552			50,220	353,996			37,039		7,950	44,980
Tule Lake division	4,464		1,144			82	5,690			1,784			1,784
South Dakota: Belle Fourche	294,417	990	5,488	1,240		52,946	295,081			11,738		11,820	23,558
Utah: Strawberry Valley	356,723		8,459	1,056	15,305	40,674	422,217	469		27,355		74,652	102,476
Washington: Okanogan													
Yakima	13,776		650	160		1,010	15,596			2,787		15,470	18,257
Sunnyside division	1,730,037		34,650	5,050	57,590	139,634	1,966,961	22,146		884,213		246,791	1,153,150
Tieton division	364,800		7,421	603	12,324	30,000	415,151		14,479	110,749		16,500	141,728

Data are for calendar year (irrigation season) except on Salt River project, where data are for corresponding "agricultural year," October, 1922, to September, 1923.

Summary of crop reports on Government reclamation projects in 1923¹—Total crop values—Continued

State and project	Hay and forage						Vegetables and truck						
	Alfalfa hay	Clover hay	Other hay	Corn fodder	Other forage	Pasture	Total	Beans	Onions	Potatoes, white	Potatoes, sweet	Truck	Total
Wyoming:													
Shoshone—													
Garland division.....	\$363,660	\$904	\$632	\$7,472	-----	24,081	396,749	\$16,270	\$2,000	\$139,601		\$15,845	\$173,716
Frannie division.....	70,620		1,152	728		4,034	76,534	235		6,104		4,681	11,020
	14,527,492	145,744	206,600	135,742	\$760,991	\$1,698,813	\$17,475,382	193,402	510,519	4,179,941	\$46,277	3,571,592	8,501,731

Irrigation and crop results, Government reclamation projects, 1923 ¹

State and project	Lands on projects covered by crop census				Other lands served by Government works, usually a partial water supply through private canals under Warren Act contracts						
	Irrigable acreage ²	Irrigated acreage	Cropped acreage ³	Crop value		Irrigable acreage	Irrigated acreage	Cropped acreage	Crop value		Approximate percentage of total water used supplied by United States
				Total	Per acre				Total	Average per acre	
											Per cent
Arizona: Salt River ⁴	213, 170	\$ 204, 590	188, 070	\$18, 619, 130	\$99. 00	4, 150	1, 960	1, 620	\$88, 500	\$55. 00	100
Arizona-California: Yuma	57, 500	53, 270	53, 050	4, 223, 600	79. 61						
California: Orland	20, 670	15, 500	12, 420	637, 020	51. 30						
Colorado:											
Grand Valley	30, 000	12, 870	12, 110	560, 000	46. 25	18, 350	11, 000	10, 500	1, 075, 000	102. 00	100
Uncompahgre	97, 060	64, 320	64, 010	2, 224, 710	34. 76	920	920	920	37, 780	41. 06	100
Idaho:											
Boise	120, 300	112, 500	108, 950	4, 474, 520	41. 07	147, 800	137, 000	130, 000	5, 070, 000	39. 00	28
King Hill ⁶	16, 890	7, 020	6, 710	233, 820	34. 84						
Minidoka, Gravity and pumping divisions ⁷	121, 570	104, 470	97, 680	3, 453, 500	35. 35	700, 000	610, 000	560, 000	16, 800, 000	30. 00	12
Montana:											
Huntley	32, 000	18, 780	18, 780	783, 850	41. 74						
Milk River ⁸	97, 300	19, 270	19, 220	159, 970	8. 33	32, 550	22, 650	22, 650	331, 550	14. 65	25
Sun River—											
Fort Shaw division ⁹	} 42, 470	{ ¹⁰ 6, 470	8, 130	102, 990	12. 67						
Greenfields division ¹¹			20, 250	250, 180	12. 35						
Montana-North Dakota: Lower Yellowstone ¹²	58, 000	17, 850	17, 780	506, 620	28. 50						
Nebraska-Wyoming: North Platte, Interstate, Fort Laramie and Northport divisions											
Nevada: Newlands	185, 340	128, 800	125, 910	2, 776, 380	22. 05	127, 970	112, 280	112, 280	3, 035, 170	27. 03	45
New Mexico: Carlsbad	73, 730	44, 890	41, 130	1, 153, 450	28. 05						
New Mexico-Texas: Rio Grande	25, 000	24, 060	22, 630	1, 781, 430	78. 70						
North Dakota: Williston	109, 060	92, 220	86, 900	7, 563, 230	86. 95	14, 920	6, 750	6, 750	756, 930	112. 13	
North Dakota: Umatilla	7, 650	1, 170	1, 130	27, 830	24. 80						
Oregon: Umatilla	24, 470	13, 350	12, 350	428, 300	34. 67						
Oregon-California: Klamath, Main and Tule Lake divisions	45, 300	37, 700	32, 920	512, 760	15. 58	11, 310	13 9, 700	9, 200	185, 000	20. 10	100
South Dakota: Belle Fourche	81, 900	14 30, 550	50, 290	609, 470	12. 12						
Utah: Strawberry Valley	53, 890	34, 290	31, 020	1, 414, 460	45. 59	22, 260	21, 100	21, 100	1, 176, 830	55. 77	52

	7,600	5,160	4,550	960,040	211.05				
Washington:									
Okanogan.....									
Yakima, Sunnyside and Tieton divisions.....	127,180	123,350	105,570	10,606,770	100.47	118,020	118,020	9,001,100	76.26
Wyoming:									
Shoshone—		{	30,130	854,320	28.35				
Garland division.....	70,350	8,190	8,090	127,850	15.80				
Framme division.....									
Total.....	1,718,400	1,213,700	1,179,870	65,046,300	55.13	1,231,400	1,051,380	37,557,860	37.82

Do not use for calendar year (irrigation season) except on Salt River project, where data are for corresponding "agricultural year," October, 1922, to September, 1923.

² Areas Bureau of Reclamation was prepared to supply water.

2 Areas Bureau of Reclamation was prepared to supply water.
3 Irrigated crops. Excludes small areas on few projects cropped by dry farming.

irrigated crops. Excludes small areas on new projects cropped by dry farming.

Data furnished by Salt River Valley Water Users' Association, which operates the project.

⁴ Data furnished by Salt River Valley Water Users Association, which operates the project. Total, 1,400,514 acres reported as vacant 3,031 acres of "home tracts" and 3,548 acres within town sites, on which no crops were reported.

⁵ Includes 9,514 acres reported as vacant, 3,031 acres reported as planted in rice, and 1,000 acres reported as planted in other crops. Will irrigation district.

⁶ Data furnished by King Hill irrigation district, which operated the division of the irrigation district which operated the division

7 Data furnished by Minidoka irrigation district, which operated the division.

⁸ Crop reports covered an additional area of 13,400 acres cropped by dry fa-

9 Crop reports covered a small additional area cropped by dry farming.

¹⁰ Owing to excessive rainfall considerable area cropped without irrigation.

¹¹¹ Figures are for 102 irrigated farms, which included 1 farm using water but not cropped.

¹² Crop reports covered an additional area of 14,800 acres cropped by dry farming, producing crops worth \$129,270, or \$8.74 per acre.

12 Crop reports covered an additional area of 14,800 acres cropped by dry farming, pro-

Summary of crop reports on reclamation projects in 1923

NOTE.—These figures are limited to irrigated crops covered by crop census on Government projects proper, excluding dry-farm crops and all crops in most areas served stored water under the Warren Act.

Crop	Acreage cropped		Yields			Crop value		
	Total	Per cent of cropped	Unit	Total	Average per acre	Average per acre	Total	Per cent of total value of all crops
Cereals:								
Barley	30,759	2.6	Bushels	993,715	32	\$21.90	\$673,875	1.0
Corn (Indian)	77,154	6.6	do	2,246,802	29	21.43	1,653,760	2.5
Oats	41,281	3.5	do	1,735,680	42	10.56	646,665	1.0
Rye	1,046		do	12,942	12	8.66	9,060	
Wheat	137,680	11.7	do	3,552,391	25	23.87	3,277,879	5.4
Total	287,920	24.4		8,546,530	29	21.75	6,261,239	9.9
Other grain and seed:								
Alfalfa seed	34,278	2.9	Bushels	570,282	16.6	33.23	1,139,147	1.7
Clover seed	9,576	.8	do	49,270	5.1	52.77	505,337	.8
Grain sorghum	6,004	.6	do	202,430	33.7	32.17	193,158	.3
Flaxseed	147		do	820	5.6	11.72	1,723	
Millet seed	394		do	3,988	10.1	25.70	10,127	
Total	50,399	4.3		826,790	16.4	36.70	1,849,492	2.8
Hay and forage:								
Alfalfa hay	438,240	37.1	Tons	1,298,212	2.9	33.00	14,527,492	22.3
Clover hay	12,066	1	do	19,567	1.6	12.08	145,744	.2
Other hay	23,754	2	do	22,607	.9	8.70	206,600	.3
Corn fodder	6,953	.6	do	20,566	3	19.52	135,742	.2
Other forage	22,274	2	do	10,158	.5	34.17	760,991	1.2
Pasture	166,503	14.1	do			10.20	1,698,813	2.6
Total	669,790	56.8				26.00	17,475,382	26.8
Vegetables and truck:								
Beans	5,228	.5	Bushels	67,573	13	37.00	193,402	.3
Onions	1,743	.1	do	605,436	347	292.90	510,519	.8
Potatoes, white	51,311	4.3	do	8,089,494	158	81.46	4,179,941	6.4
Potatoes, sweet	318		do	25,387	80	145.62	46,277	
Truck	21,146	1.9	do			16.89	3,571,592	5.5
Total	79,746	6.8				106.61	8,501,731	13.0
Fruits and nuts:								
Apples	26,617	2.2	Pounds	239,787,200	10,886	226.00	6,024,997	9.3
Peaches	2,168	.2	do	17,319,550	7,988	156.00	338,690	.5
Pears	4,582	.4	do	31,267,320	6,825	196.00	900,435	1.4
Prunes	1,379	.1	do	8,888,800	6,446	66.00	90,861	.1
Citrus fruit	2,155	.2	do	15,504,000	7,194	395.00	850,920	1.3
Small fruit	1,555	.1	do	2,783,340	1,789	298.00	463,042	.7
Miscellaneous	3,529	.3	do	11,098,160	3,145	193.00	683,326	1
Total	41,985	3.5		376,648,370	8,971	223.00	9,352,271	14.3
Miscellaneous:								
Sugar beets	54,777	4.7	Tons	548,162	10	78.04	4,274,852	6.6
Cotton	135,627	11.4	Pounds	50,458,610	372	123.46	16,745,231	25.8
Cotton seed				98,200,120	724			
Cane	2,572	.2	Tons	8,860	3.4	22.82	58,714	
Other crops	13,814	1.2				38.20	527,388	.8
Total	206,790	17.5				104.50	21,606,185	33.2
Duplication	156,760	13.3						
All crops	1,179,870	100.0				55.13	65,046,300	100.0

Irrigable, irrigated, and cropped acreage, and crop value

Year	Irrigable acreage	Irrigated acreage	Cropped acreage	Crop value
1913	1,181,362	694,142	637,227	\$15,676,411
1914	1,240,875	761,271	703,424	16,475,517
1915	1,330,222	814,906	757,613	18,164,452
1916	1,405,452	922,821	858,291	32,815,972
1917	1,502,468	1,026,663	966,784	56,462,313
1918	1,601,931	1,119,566	1,051,193	66,821,396
1919	1,636,159	1,187,255	1,113,469	88,974,137
1920	1,661,960	1,225,480	1,153,820	66,171,650
1921	1,674,100	1,227,500	1,157,900	49,620,300
1922	1,692,700	1,202,130	1,169,100	50,360,850
1923	1,718,400	1,213,700	1,179,870	65,046,300

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